



613.11

A

PRACTICAL TREATISE
ON
DISEASES OF THE EYE.

BY

WILLIAM JEAFFRESON,

LATE
SURGEON TO THE BOMBAY EYE INFIRMARY,
IN THE
HON. EAST INDIA COMPANY'S SERVICE,
&c. &c.

LONDON:
HENRY RENSHAW, 356, STRAND.

M D C C C X L I V .

LONDON :

PRINTED BY G. J. PALMER, SAVOY STREET, STRAND.

TO THE

RIGHT HONOURABLE THE EARL OF CLARE,

LATE GOVERNOR OF BOMBAY,

&c. &c &c.

IN ADMIRATION OF HIS ENLIGHTENED AND SUCCESSFUL

EFFORTS TO RAISE THE CHARACTER AND STATION

OF THE NATIVES OF

INDIA

TO A HIGHER STANDARD OF EXCELLENCE,

AS WELL AS FOR

PERSONAL KINDNESS MOST GRATEFULLY REMEMBERED,

This Work is Dedicated,

BY HIS

LORDSHIP'S OBLIGED AND OBEDIENT SERVANT,

THE AUTHOR.

P R E F A C E.

So abundant in the present day are works upon almost every branch of medical literature, that a preface is in every instance nearly, not only the vehicle for apologies respecting the manner in which a subject is treated, but for even intruding a new work upon the attention of the public. The author of the present treatise cannot do less than follow the fashion of the day, in craving the indulgence of his readers, and offering them this two-fold apology. To use the language of the painter, he is willing to confess that he has selected an old subject; but he trusts that having treated it somewhat differently, it may not prove altogether uninteresting; and if he has painted it in new colours, he hopes these colours may be found true to nature and that some profit may be derived from his humble efforts.

With increase of knowledge and civilization, greater humanity, (if the expression may be allowed,) has diffused itself through all branches of the healing art. To say nothing of those darker ages in which the branding

iron or boiling pitch did the offices, which are now conceded to the tenaculum and ligature of silk, the public are at last beginning to appreciate the merits of the surgeon who saves, above those of him who skilfully removes a limb. Even in the more minute details of medical practice, some consideration has been shown for the comforts of the patient, many drugs having been rendered less bulky in form and less nauseous in quality; the physician is ambitious of curing not only "*tuto et cito*" but also "*jucunde*." In all departments of practical medicine, nature is becoming more studied and respected, and less violent notions are beginning to be entertained respecting disease. Inflammation is beginning to be considered not in name only; but in respect to states not only of parts but the system in general, so that the copious and indiscriminate blood-letting so strongly advocated in by-gone days, is discarded and condemned in many instances by the best modern practitioners. It is perhaps not too much to assert that the increased amenity, which is beginning to pervade other branches of medicine and surgery, has been but slowly applied to ophthalmic practice. Less has been trusted to nature, and diseases of the eye are even now combated with a severity of treatment, which would not be applied to similar affections in other situations. True it is, that from the nature of the organ affected, slight changes alone, impairing the transparency of its struc-

tures, may be disastrous in a degree disproportioned to similar changes in other parts ; but even in these structures, minute and delicate as they are, Nature is not deficient in her powers of repair ; and the consideration of this subject should rather lead the public to seek early attention to diseases of the eye, than the profession to combat them at advanced stages, by means which are then at least incapable of restoring the structural alterations which have been already established. Then, against this consideration must be set the still more important one, that the eye is not a vital organ, consequently but few of its diseases are attended with danger to life ; the oculist, therefore, should be careful in his attempts at repairing a valuable, but not a vital, organ, to avoid as much as possible all serious injury to the whole machine of which this is but a part.

The present work has been undertaken chiefly with the motive of inculcating the necessity for regarding ophthalmic practice as but a branch of the whole science of practical medicine ; and in order to modify those more violent notions respecting the treatment of diseases of the eye, which are as yet even but too prevalent. One other inducement, however, has actuated the author.

In the multitude of other occupations, and the studies which the regulations of the present day have imposed upon the general practitioner, it is hardly possible for him to have devoted much time and attention to the consi-

deration of this particular branch of medicine during his pupilage, and yet in after life the responsibility of many serious forms of disease of the eye will probably fall to his lot. It has been the author's endeavour so to simplify his subject as to render assistance to this highly valuable and intelligent body of practitioners. Without wishing in other respects to detract from the merits of the works of preceding or cotemporary authors of the most undoubted talent and deserved repute, it may be said that almost every work on the diseases of the eye, by indulging in a minuteness of detail respecting the symptoms, which is entirely disproportioned to the resources of treatment, tends rather to confuse than to assist the inexperienced practitioner, whilst the profusion of hard names with which it has been thought desirable to garnish this department of medicine, is really enough to frighten an ordinary student from the field of inquiry. If, therefore, it shall be found that some few affections of the eye, which have obtained a place in the more lengthy treatises on this subject, have been entirely left out or only cursorily noticed, it is hoped at least, that no very important subjects have been omitted.

In the chapter on cataract, the author has advocated an operation of the successful application of which he has had ample experience, and to the easier performance and superior success of it, as compared with the operations in general use, he especially wishes to draw the attention of his professional brethren.

It has not been the author's wish or intention to aim at originality for originality's sake ; where he has differed from others in points of practical opinion, it has been his desire not to lose sight of the deference and respect which they deserve ; whilst he would in his turn claim the same indulgence for opinions founded on a practice of twenty-five years, during which he has enjoyed an extent of professional experience equalled probably by few. The brevity and conciseness of the present work, which it is hoped may prove no unacceptable quality to those whose numerous other engagements preclude them from the perusal of more lengthy books, must plead an apology for that want of reference to the works and authorities of other writers, which would be less excusable in a more lengthy treatise.

21, South Audley Street, Grosvenor Square.

June 1844.

CONTENTS.

PREFACE	<i>Page v. to x.</i>
-------------------	----------------------

CHAPTER I.

INTRODUCTORY.

Object of the work	1
Ophthalmic medicine and surgery but a part of the whole system of medicine and surgery	2
General observations on diseases of the eye	5
Establishment of the Bombay Eye Infirmary	8
Address of the principal natives to the author	10
Abstract of fifty three thousand three hundred and fifty-nine cases treated at the Bombay Eye Infirmary	12
General observations on this abstract	12
Analysis of	15

CHAPTER II.

ACUTE NON-SPECIFIC INFLAMMATION.

General observations on the inflammatory affections of the eye	18
Acute non-specific inflammation	21
Inflammation of the iris	27
of the cornea and sclerotic	33
of the conjunctiva	35
Collyria, or eye-washes	39
Solutions dropped into the eye	40
of nitrate of silver	41
Fumigations	42
Topical bleeding	44
Blisters, setons, issues, &c.	46
Native medicine dropped into the ear for affections of the eye.	47

CHAPTER III.

CHRONIC AND SPECIFIC INFLAMMATION.

Chronic ophthalmia	49
Strumous ophthalmia	50
ophthalmia, with pustules	57
Rheumatic ophthalmia	63
Intermittent ophthalmia	66
Syphilitic iritis	66
Gonorrhœal ophthalmia	70
Purulent ophthalmia	73
Of infants	77
Of adults	82
Effusion of pus into the anterior chamber	93
Egyptian ophthalmia	97
Inflammation of the whole ball of the eye	99
Variolous ophthalmia	101
Ophthalmia from measles, scarlatina, erysipelas, &c.	103

CHAPTER IV.

STRUCTURAL CHANGES THE RESULT OF INFLAMMATION,
AFFECTIONS OF THE HUMOURS, &c.

General observations	104
Ulcers	107
Leucoma	117
Nebula	119
Staphyloma	122
Arcus senilis	122
Pterygium	126
Affections of the humours	127
of aqueous humour—Hydrophthalmia	127
of vitreous humour—Glaucoma	128
Tremulous iris	130
Treatment of glaucoma	131
Closed pupil, and the operation for	132

CHAPTER V.

AFFECTIONS OF THE VARIOUS APPENDAGES OF THE EYE.

Of the lids	137
Granular lids	138
Lippitudo and tinea	140
Thickened tarsus—Its prevalence and severity in China	143
Trichiasis	145
Entropium	146
Ectropium	149
Adhesions of the lids	151
Ptosis	151
Affections of the lachrymal apparatus	153
Of the lachrymal gland	153
Profuse secretion of tears	154
Deficient ditto	155
Of the lachrymal sac and duct—Obstruction—Fistula lachrymalis, &c.	155
Strabismus or squint	157

CHAPTER VI.

ON THE AFFECTIONS OF THE NERVES OF VISION.

General remarks upon	162
Seats of the various forms of disease	164
Inability to distinguish colours	165
Amaurosis—General consideration of—Symptoms, &c.	168
Dependent upon pressure on the brain or optic nerves	168
By tumours	172
Apoplexy—Mechanical injuries—Rupture of blood vessels	174
Congestion of brain	176
Inflammation	177
Amaurosis, of however long standing, and apparently hopeless, is often most unexpectedly cured—Two cases	180
Amaurosis from exhaustion and draining of the blood	183
From constitutional derangement	187
From morbid impressions made upon the nerves of vision direct or indirect—From the alimentary canal, &c., as by worms	188

Use of strychnia	192
Paralysis of portions of the retina, or partial amaurosis	193
Muscæ volitantes, or floating specks	195
Nyctalopia, or day blindness	198
Hemeralopia, or night blindness	200

CHAPTER VII.

CATARACT.

Cataract—General observations upon	203
The structure of the lens and seats of the disease	204
General description of its symptoms and diagnosis	207
Lenticular, hard and soft	209
Capsular	210
Capsulo-Lenticular	211
Proximate cause of	212
Effects of constitutional treatment in preventing, arresting, or curing	216
Spontaneous cure of	220
Complications affecting the mode or propriety of operating . .	222
Propriety of operating on one eye only	224
Modes of operating for	
Extraction	226
Couching, depression, reclinatio	
n	231
Solution	232
Mixed operation advocated by the author	233
Treatment to be adopted previously to operating	235
Consideration of the risks of inflammation—The nature of the operation, with the different subsequent demands of each upon the restorative powers—Blood-letting—Opiates—Tonics—Aperients, &c.	
Treatment to be adopted after the operation	239
Comparative merits of the various forms of operating, extraction, couching, and solution	241
Comparison of these modes with the author's operation	247
Cataract as occurring in the extreme of old age	252
In the extreme of youth, or Congenital cataract	253

CHAPTER VIII.

MALIGNANT DISEASES—MECHANICAL INJURIES, &c.—			
MEANS OF PRESERVING THE EYE-SIGHT.			
Malignant diseases of the eye	258		
Cancer of globe	259		
Peculiar form of cancerous ulceration affecting cheek and lids	261		
Melanosis and fungus haematoxides of globe	262		
Two cases	268		
Cautions about the operation of extirpation, and cases liable to be mis- taken for malignant disease	271		
Various forms of tumours of the lids	274		
Mechanical injuries to the eye	277		
Considered in respect to the nature of the injury—Its extent —And the tissues affected—And as respects the habit and constitution of the patient who sustains the injury	281		
Accidents to the eye by railroad travelling, and means of prevention . .	283		
Effusions of blood under the conjunctiva	286		
Into the anterior chamber—False cataract, &c.	287		
Ossifications of various parts of the eye—Of the Iris	288		
Entozoa in the human eye	289		
In the eye of the horse, cured by operation—A case of	290		
Absence of the eyes at birth	292		
Artificial aids to vision	292		
Telescope and microscope	294		
Long or far,—And short or near sight—Their causes	295		
Choice and use of spectacles	298		
Cataract glasses	301		
Spectacles as mere eye-preservers	301		
Some remarks on the preservation of eye-sight	303		
Beneficial effects of cold bathing, in health and disease	305		
Soorma—Its use by natives in India against cataract, and as a means of beautifying themselves	306		
Shades to the eye in health and disease	306		

INTRODUCTORY CHAPTER.

OBJECT OF THE WORK—OPHTHALMIO MEDICINE AND SURGERY BUT A PART OF THE WHOLE SYSTEM OF MEDICINE AND SURGERY—GENERAL OBSERVATIONS ON DISEASES OF THE EYE—ESTABLISHMENT OF THE BOMBAY EYE INFIRMARY—ADDRESS OF THE PRINOIPAL NATIVES TO THE AUTHOR—ABSTRACT OF FIFTY THREE THOUSAND THREE HUNDRED AND FIFTY-NINE CASES TREATED AT THE BOMBAY EYE INFIRMARY—GENERAL OBSERVATIONS ON THIS ABSTRACT—ANALYSIS OF.

THE object of the present work is not so much to exhaust the subject of ophthalmic medicine, by a fine-spun and lengthened treatise upon every form of disease to which the human eye is subject, as to present the reader, as if at a glance, with a summary of all the more important diseases of the eye; and to afford a short, concise, and practical guide to the great general principles of treatment of each peculiar form of disease.

In the earlier periods of medical history, we do not find that ophthalmic medicine and surgery formed a distinct branch of the whole science of medicine; and, judging from his works, Celsus at least appears to have been no

less skilled in this than in all other branches of the healing art. The present advanced state of the arts and sciences, but above all, perhaps, a greatly increased and concentrated population, has given rise to the adoption of that system of division of labour in medicine which has been so successfully and advantageously applied to many of the mechanical arts; out of such a classification arises the pure oculist.

Some advantages have been obtained from such a division of labour in the case at present in question; and that more particularly in reference to the less frequent forms of affection of the eyes and the operative department, which, although not offering more, or in many instances so many difficulties and complications as other surgical operations, yet, being conducted upon an organ so small and so delicate, requires a tact and nicety of touch which can only be acquired by much practical experience.

It is only, however, in its practical application that the art of the oculist can be safely separated from that of its parent art, medicine. Its principles are identical; and whilst the only sound foundation for ophthalmic practice is to be found in the general science of medicine and surgery, these latter in their turn receive some of their happiest illustrations from the study of the peculiar diseases of the eye.

My talented and respected friend Dr. WATSON, in his

excellent lectures on the Practice of Physic, having gone into the great general principles of that science, introduces his more detailed account of each particular disease by some general observations upon the diseases of the eye, for which he gives the following reason. " My real and only motive, however, for beginning with a few of the numerous morbid states to which this little part is liable, is this, that we find in the cye more satisfactory and plain illustrations of the general facts and doctrines of pathology, as I have been endeavouring to set them before you, than in any other single organ of the body." And further, he quotes from Dr. Latham's excellent work on Clinical Medicine: " From the peculiar structure of the eye, you see them (i. e. those morbid processes) as through a glass, and you learn many of the little wonderful details in the nature of morbid processes which, but for the observation of them in the eye, would not have been known at all."

The same high authority may be further quoted, in support of the more important position, that all oculists should be thoroughly grounded in the great general principles and practical details of medicine and surgery; for he says, in speaking of the treatment of the diseases of the eye, " we seek to change the condition of a small portion of the body, by remedies that act upon and through the system at large." How can such treatment be rightly understood, or applied with certainty and pre-

cision, by one unskilled in the great principles of medicine and surgery? In addition to this it may be stated, as is observed by Mr. Lawrence, that within the orbit is contained almost every variety of structure which is to be found in the anatomy of the human frame; bone, artery, vein, nerve, muscle, tendon, mucous membrane, glands, &c., all subject to similar forms of diseased actions, and all amenable to the same general rules of treatment. This subject, however, requires the rather to be insisted upon, in that, from the nature of its structure, the eye presents some peculiarities as respects the effects of diseases occupying this delicate organ. The great majority of diseases of the eye are not formidable as respects the risk of life itself, but to the impairment of those delicate and transparent structures through whose medium the retina receives its impressions. Hence has too frequently arisen, on the part of the patient, an over anxiety with regard to his own sufferings, and on that of the practitioner, founded no doubt on honorable motives, an eagerness to arrest all morbid processes of this organ, with an activity and impetuosity of treatment which has unfortunately not uncommonly led him to sacrifice the whole (the constitution) to the part. That such is no imaginary or exaggerated picture of ophthalmic practice, even in the present day, will be shown in several instances in the further progress of this work. Nor is constitutional derangement the only ill effect of this "*nimia medici dili-*

gentia," the eye itself suffering in this general deterioration of the system, of which it is but a part, goes into a state of further, and perhaps new forms of disease. Such increase of mischief is set down as the result of the inevitable and intractable nature of the affection, and thus the error which should have been detected is but perpetuated.

The infinite variety of parts contained within so small a space as the orbit, and the great importance of almost all these parts to the function of the eye as a whole, would lead one, *a priori*, to suppose that disease of any one structure would speedily spread to all the others, and as speedily destroy the functions of the whole. Such, however, is not so frequently the case as might have been supposed; for although all its structures, or several of them, are sometimes simultaneously affected, yet it more frequently happens that diseased action is confined to one structure, and capable, under timely and judicious management, of entire cure, or removal to such extent as to leave the functions of the organ altogether unimpaired.

The excessive practice to which I allude is especially that of blood-letting, mercurial treatment, and all those means which tend greatly to lower and impair the general powers of the system. And although I am far from wishing to insist on the abolition of such plans of treatment in those cases which really require them; yet it will be my endeavour to show that such treatment is far less

frequently required than is generally supposed, and rarely needs to be pushed to those extremes which the older praetitioners almost universally, and those of the present day too frequently, advoeate.

Nor is this the only point of view in whieh this plan of treatment is to be regarded. A large portion of praetitioners, imbued with a strong disposition to attribute almost all hidden morbid phenomena to inflammation, or proeesses analogous to inflammation, are disposed to combat an imaginary form of disease with that most deadly of all weapons (if not properly wielded) the lancet. The oculist, strongly imbued with the principles of Broussais or Clutterbuek, would find ample opportunities of refuting his principles by reference to his practice; but as all persons are naturally slow to give up preconceived notions, it is probable that he would be long ere he deigned to correct his principles by his practice, and thus carry them into more general and useful practical application.

Nor are these the only, or perhaps the most important bearings of general principles upon the practice of ophthalmic medicine. The eye in its various parts is no less under the influence of those perpetual changes in its atomic structure, connected with absorption and deposit, modelling and growth, than are the other parts of the system; and it is through these proeesses eoming out of states of general health, that we are to look for many of

the most important curative processes which it is our business to elicit. In speaking of cataract, I shall have occasion to show that the crystalline lens, isolated as it is from other parts, far removed as it appears to be from other living structures, is by no means beyond the pale of those all-important vital phenomena. Nebulæ of the cornea, which will be hereafter further explained, can only be removed by processes of absorption ; and such is also the case of deposits of lymph, and some portions of purulent effusions or deposits of matter. The optic nerve may be rendered incapable of receiving and conveying the impressions of light, by causes arising out of states of the whole system, and to be cured only by means addressed to it through that system. Common ulceration of the transparent cornea requires for its cure the establishment of local actions arising out of constitutional states, as in the ordinary ulcers which come under the care of the surgeon ; and common operations for cataract require the same processes of cure, whether by granulation or healing by the first intention, as do the largest wounds inflicted by accident or the surgeon's knife.

It was the author's good fortune to be educated under the justly celebrated and talented surgeon Mr. Abernethy, —a man who was ever more anxious to point out great and important analogies in nature, than to fritter away truth by fine-spun differences and distinctions ; a man who was foremost in vindicating the great general principles of

surgery, and in showing the connexion of so-called local diseases with constitutional states, and their successful treatment by means directed through the system as a whole.

The sound doctrines taught by this great surgeon, imparted as they were in language whose eloquence was its simplicity, and further impressed upon the minds of his pupils with the affectionate earnestness rather of a parent than a master, could not fail to make lasting impressions on the minds of all, and in the calling of life into which after circumstances led me, I cannot express too strongly my gratitude to a friend and teacher, from whose precepts I early learnt to look upon all affections of the eye in connexion with their constitutional origin and treatment.

It may be proper here briefly to state the circumstances which have enabled me to obtain that experience which may entitle me to claim some attention to my opinions on the subjects of ophthalmic medicine and surgery; a circumstance rendered more necessary, from the fact that a distant clime was the field of my chief exertions, both in public and private practice.

From the great prevalence of cataract and other forms of disease of the eye in our Indian colonies, the Honourable East India Company, actuated by those beneficent and kindly motives which have so generally characterized their public acts, were induced, in the year 1822, to esta-

blish two new appointments of surgeon oculists, the one to be stationed at Bombay, the other at Calcutta. Under the powerful recommendation of the justly-celebrated Mr. Travers, I was nominated to the appointment of superintendent surgeon oculist at Bombay. By the further benevolence of the Honourable Court of Directors, I was instructed to establish an hospital at Bombay, dedicated solely to the object of eye diseases. This hospital, into which, of course, the worst cases only, or those requiring operations, were admitted, was conducted on the most liberal system, and was capable of containing one hundred and twenty beds. From the most distant parts of India and Persia, persons of all ranks soon flocked to Bombay, to come under my care, either as private patients, or in my public character as surgeon oculist to the Honourable East India Company. Occasional visits to some of the more important military or civil stations still further augmented my facilities of becoming practically acquainted with this department of my profession ; and in all these stations a portion of the wards of the general hospitals, native and European, were always devoted to my service, for the reception of such cases as might require this accommodation.

The following abstract of cases which came under my care will afford sufficient evidence of the amount of my personal experience. Of the manner in which I executed the important task assigned me, it does not become me to

speak ; but the handsome and unlooked-for Address* with which the principal native inhabitants of Bombay honoured me, on the eve of my departure from their presidency for the benefit of my health, together with the splendid service

* TO WILLIAM JEAFFRESON, ESQ.

In charge of the Honorable East India Company's Ophthalmic Institution,
&c. &c. &c.

SIR.—The announcement of your intended departure from Bombay, for the benefit of your health, has filled us with the most lively regret, as we shall lose in you a most able professional man, an unwearied and constant attendant during the tedious hours of sickness, and a most affable and conciliating friend. We have therefore found it impossible, with a due regard to our feelings, to allow this opportunity to pass without expressing the gratitude we feel for your manifold kindnesses, both to us and our families, and the deep admiration we have for your professional abilities and skill.

If there is one bright point more than another on which we can dwell with the greatest pleasure to ourselves, it is, that your attention and professional skill have never been reserved for the wealthy alone ; the poor and indigent have experienced your kindness, and now, through us, offer their most grateful thanks.

You have made the blind man to experience the exquisite delight of beholding the works of nature ; and to him your name can never be forgotten, or your praises relinquished, except with death.

That your health may be perfectly restored, and that you may soon again be amongst us, will be our constant prayer. As a token of our affectionate remembrance and gratitude, we beg your acceptance of a piecee of plate of the value of three hundred guineas, which we hope will in after life afford you

of plate which accompanied it, demand the warmest expressions of my gratitude.*

It will be seen that the author's experience has extended to the enormous amount of upwards of fifty thousand cases, exclusive of the cases which his extensive travels and subsequent practice have brought under his observation, during the ten years since this report.

some pleasure, as having been presented to you by those who appreciated your virtues, and had experienced your fostering care.

We remain,

SIR,

Your most obedient and very humble Servants.

CURSETJEE ARDASEER.

(And a long list of the principal native inhabitants.)

Bombay, 4th May, 1830.

For this Address, as also my Reply, see Bombay Courier, June 19, 1830.

* The natives are particularly sensitive to kindness. I may here mention a trifling circumstance which occurred soon after my arrival in India, which was the means of my early obtaining their confidence and favour. A female servant of the Parsee tribe, from a fall, met with a compound fracture of the arm; the native doctor had bandaged it up so tightly that mortification took place. I was asked to visit her at so late a period, that it was doubtful whether her life could be spared, even by the amputation of the limb. When this, the only hope, was suggested they paused, the operation being almost unheard of amongst them. However, permission being obtained, with the assistance of Mr. Deacon, of the Bombay medical service, I removed the arm, and the patient rapidly got well. A letter of thanks, accompanied by a handsome present, from the higher orders of this tribe followed, and what I have ever valued still more highly, their kind remembrance of me to this day.

ABSTRACT.

Names of Different Diseases treated in the Bombay Eye Infirmary, from January, 1824, to October, 1834.	Number of each Disease.	Restored to perfect sight by operation or other treatment.	Restored to an useful degree of sight, or relieved.	Not treated, being incurable.	Died.
Cataract	7334	5517	1817	...	...
Amaurosis (various degrees of) ...	3615	1432	2183	...	...
Leucoma	918	54	864	...	...
Nebula	2530	2210	320	...	...
Ophthalmia (various degrees of)...	12128	12077	51	...	...
Ulcer of Cornea	3402	2416	986	...	...
Granulous Eye-lids.....	3372	3308	64	...	...
Fistula Lachrymalis	281	197	84	...	...
Staphyloma.....	652	82	570	...	...
Fungus Hæmatodes	25	...	18	...	7
Iritis	2023	1963	60	...	...
Hydrophthalmia.....	71	8	63	...	...
Lippitudo and Tinea	4332	4332	...	...	...
Glaucoma	310	26	284	...	...
Nyctalopia (Day Blindness)	14	8	6	...	...
Hemeralopia (Night Blindness)...	470	340	130	...	...
Strabismus, or Squint.....	23	6	17	...	...
Closed Pupil	820	461	359	...	...
Pterygium	1324	1120	204	...	...
En and Ectropium	467	439	28	...	...
Tumours (various kinds).....	568	568	...	...	...
Totally and Irrecoverably Blind...	8680	...	...	...	...
Total.....	53359	36564	8108	8680	7

It may be well to make a few general cursory observations on this abstract. In the first place, it must be remarked that this table, constructed simply with the view of affording to government a rough record of the total amount and leading characters of the cases which came under treatment, must not be considered in the same light as if it had been drawn up for scientific purposes, in which respect it is certainly defective in many points of view; the over-

whelming fatigues of practice so extensive, and that under an Indian sun, must be my apology to the profession, as it is my only excuse to myself, for having neglected to carry out such a table, which would have been no less useful than interesting, but which it is now impossible to remodel; as some further excuse, moreover, it may be stated that the application of statistics to medicine and surgery, is one of the most essentially useful professional reforms of a period subsequent to the commencement of my career in India. One of the first deficiencies in this respect which must strike the professional observer, is the want of grouping into more defined classes the prodigious number of cases of ophthalmia; then the cases of cataract might have been divided into several classes, correspondent with their essential nature, complications, or the mode of operation resorted to for their cure; the cases of amaurosis might have been so grouped as to show the comparative curability of different forms of this disease, or of similar forms under somewhat different plans of treatment. Then with regard to the results of treatment in all cases, these might have been for scientific purposes subdivided into a greater variety of shades than was consistent with the object which this table was constructed to answer. With all these imperfections, however, it is hoped that this short table may present objects of interest even to the scientific reader, and it will be my endeavour, in speaking of each parti-

cular form of disease, to give, in the shortest and simplest manner, the results which this amount of experience has impressed upon my own mind.

The great proportion which the cataracts bear to other forms of disease, and especially to ophthalmia, in the ratio of about seven to twelve, cannot fail to strike the professional reader with much astonishment; but it must be remembered that amongst the cases of ophthalmia are included only those which are of immediate or recent date, whereas the cataracts include the vast accumulation of those cases existing for years and years previously to the establishment of the eye infirmary, and the very great prevalence of which had mainly contributed to render such an institution requisite. To these cases of recent ophthalmia, must also be added the long catalogue of diseases mainly or entirely the result of previous neglected ophthalmia, as leucoma, nebula, ulcers of cornea, some of the cases of granulous eyelids, fistula lachrymalis, hydrophthalmia, lippitudo and tinea, and almost all the cases of staphyloma, closed pupil, and pterygium; and if to this list be added the eight thousand six hundred and eighty cases of total and irrecoverable blindness, by far the greater majority of which were due to previous inflammatory affections of the eye, the proportions will perhaps not be found to differ so widely from those which occur in European practice.

We might thus make the following analysis of this

table, which, if not affording perfectly correct results, will probably, from the very high number of the cases, give a near approximation to the proportionate prevalence of various forms of diseases of the eye in India.

Cataract	.	.	.	.	.	7,334
Inflammatory affections of the various Tunics of the Eye.						
Leucoma	.	.	.	.	.	918
Nebula	.	.	.	.	.	2,530
Ulcers of Cornea	.	.	.	.	.	3,402
Closed Pupil	.	.	.	.	.	820
Pterygium	.	.	.	.	.	1,324
Ophthalmia	.	.	.	.	.	12,128
Totally Blind	.	.	.	.	.	8,680
Staphyloma	.	.	.	.	.	652
						<hr/> 30,454
Inflammation of Iris	.	.	.	.	.	2,023
Affections of Lids and Appendages.						
Granular Lids	.	.	.	.	.	3,372
Lippitudo and Tinea	.	.	.	.	.	4,332
En and Ectropium	.	.	.	.	.	467
Fistula Lachrymalis	.	.	.	.	.	281
						<hr/> 8,452
Affections of the Optic Nerve.						
Amaurosis	.	.	.	:	.	3,615
Hemeralopia	.	.	.	.	.	470
Nyctalopia.	.	.	.	.	.	14
						<hr/> 4,099
Affections of the Humours.						
Glaucoma	.	.	.	.	.	310
Hydrophthalmia	.	.	.	.	.	71
						<hr/> 381
Strabismus	.	.	.	.	.	23
Fungus Hœmatodes	.	.	.	.	.	25
Tumours, various kinds of	.	.	.	.	.	568
Total	.	.	.	.	.	<hr/>53,359

Another circumstance which tends in some measure to account for the greater relative proportion of cataracts, amaurosis, &c. to the acute inflammatory affections, is that whilst the former comprised cases which were sent from distant parts of the country, the latter cases would more rarely admit of such a measure, and would more frequently also fall under the care of the general medical or surgical practitioners.

It will be a matter of some interest, as setting forth the real value and importance of this branch of the medical profession, to draw attention to the fact, that out of this number nearly seven thousand utterly blind persons were restored to perfect sight; namely, one thousand four hundred and thirty-two suffering from amaurosis, and five thousand five hundred and seventeen afflicted with cataract; the subjects of sixty-seven of which last were born blind. It will be also remarked that of the total number of cases seven only died, and these were cases of cancer, or fungus hæmatodes, a disease equally fatal in whatever part of the system it may first show itself, thus amply verifying the observation before made, that the risk of eye diseases does not lie in the direction of death, but of loss of vision.

The table of which the reader is presented with this rough analysis, does not, however, comprehend the numerous cases which occurred in private practice. In addition to the experience thus obtained, the author has

visited China, Egypt, Greece, Turkey, &c. &c., and during these travels has lost no opportunity of adding to his stock of professional knowledge and experience; he has also benefited by the further advantage, in the course of his extensive travels in Europe, of observing the different modes of treatment adopted by the principal continental physicians and surgeons, who apply themselves more particularly to this branch of practice.

From the glare of the sun, the dust, and the habits of the people, all forms of eye-disease are more prevalent in India than in this country; but my observation does not lead me to think that much difference exists in the comparative degrees of frequency of any particular forms of such affections, neglect of the earlier stages of slight and chronic inflammation, may perhaps favour the greater frequency of cataract and some other forms of disease, and the strong glare of the sun, together with the habits of the people generally, may tend to promote the frequency of affections of the optic nerve. In Egypt, on the other hand, ophthalmia rages in its severest and most destructive forms, and nothing is more common than to meet persons in whom one or both eyes have been utterly and irrecoverably destroyed by a previous attack of this malady in its most extended and virulent character.

The author feels that he ought to apologize for details of this kind in which his own name is necessarily so much mixed up, but he trusts that the circumstances before alluded to, will sufficiently plead his excuse.

CHAPTER II.

GENERAL OBSERVATIONS ON THE INFLAMMATORY AFFECTIONS OF THE EYE
—ACUTE NON-SPECIFIC INFLAMMATIONS—INFLAMMATION OF THE IRIS—
INFLAMMATION OF THE CORNEA AND SCLEROTIC—INFLAMMATION OF THE
CONJUNCTIVA—COLLYRIA, OR EYE-WASHES—SOLUTIONS DROPPED INTO
THE EYE—SOLUTIONS OF NITRATE OF SILVER—FUMIGATIONS—TOPICAL
BLEEDING—BLISTERS, SETONS, ISSUES, &c.—NATIVE MEDICINE DROPPED
INTO THE EAR FOR AFFECTIONS OF THE EYE.

INFLAMMATORY affections of the eye vary in their importance, and the phenomena to which they give rise, according to the part affected, and the severity of the inflammation, which may be acute or chronic ; specific or non-specific in its origin ; i. e. arising from ordinary causes by which all persons are liable to be affected, or by some peculiar condition in the system of the individual. All parts of the eye in which blood-vessels and nerves can be demonstrated, are liable to inflammation, and of these, the parts most exposed to external influences are by far the most frequently affected. A reference to the foregoing table will sufficiently establish this point.

The local phenomena whose presence is indicative of

inflammation, are generally enumerated to be redness, heat, pain, and swelling. To these signs might have been added increased and painful susceptibility of the nerves of the part affected, or in its neighbourhood, to their customary impressions.

The pearly white appearance of some, and perfect transparency of other tunics of the eye, are especially well calculated to afford that evidence of inflammation which arises out of redness, or increased distension of the minute blood-vessels; — augmented heat is chiefly learnt from the evidence of the patient's sensation, and the fact that the secretion of tears is often so hot as to cause even a burning sensation as they trickle over the cheek. Pain more or less severe is a common concomitant of most forms of inflammation of the eye; it is, however, greater in inflammation of some parts than others, and also in some forms of the disease than others. From the peculiar structure of the eye, the denseness and compactness of its tunics, and the absence of loose cellular tissue, swelling to any great extent, is less observable than in inflammations of other parts. It sometimes, however, happens that in acute inflammation of the conjunctival membrane, this is considerably raised by serous effusion round the margin of the transparent cornea, so as to give this part the appearance of being deeply set in the surrounding structures. The technical phrase for this state is chemosis. An increased and painful susceptibility of

the nerves of the part, or in the neighbourhood, is observable in many forms of ophthalmia. In some forms the slightest motion of the ball of the eye or the pressure of the lid gives rise to great pain; in others the increased fulness of the blood-vessels occasions the patient to experience a most painful sensation, as of sand or some gritty substance beneath the lid, and grating upon the eye; it is often with difficulty that he is persuaded that no such substance is really there. At other times, the susceptibility of the retina is greatly increased, and there is intolerance of light. This is remarkably observed in the instance of strumous ophthalmia, in which there is not only great intolerance of light; but the admission of a bright light to the eyes appears to cause great pain. In this, as in many other instances, the intolerance of light alone, is, I conceive, due to a peculiar irritable state of the nerves of vision; but not so, as I imagine, the pain.

The optic nerve is one of especial sense, and is not capable of conveying ordinary impressions; but it so happens of the nerves supplied to the moveable iris, that by their connexion with the optic nerve, they occasion the pupil to contract or dilate, as light is brought to or removed from the eye, so as to admit that amount of light which is best suited to serve the purposes of vision. This movement of the iris is conducted quite independently of the will, or even consciousness, of the individual.

And it is this movement of the iris which I believe is the cause of pain under these circumstances, just as to move the finger or toe, in the case of common whitlow or gout, occasions great pain and inconvenience. In further confirmation of which view it may be stated, that sneezing, a muscular action not dependent upon the optic nerve, is frequently induced in strumous and other forms of ophthalmia, on the admission of strong light to the eyes. A phenomenon which can only be explained on the principle, that the optic nerves, receiving their peculiar impression, propagate to other nerves, impressions, not of light, but of another character, which they are capable of perceiving and acting upon. We shall first speak of the acute non-specific inflammations.

Inflammation may originate in any structure of the eye, from the same causes which are capable of inducing inflammation of the internal viscera or other organs, cold, fatigue, irregularities in living, excessive indulgence in the luxuries of the table, or, on the other hand, privation of the necessaries of life, the sudden arrest of various discharges, &c. &c., may all be mentioned amongst the causes of ophthalmia; over exertion of the organ itself may pre-dispose it to be the seat of inflammatory action, arising out of general disturbance of the health, or be alone the cause of the affection. The outer or conjunctival tunic of the eye is by far the most frequently affected; nor is this to be wondered at, when we consider

how much it is exposed to external influences, as of the atmosphere, in all its varieties of temperature, to the contact of various foreign bodies, as poisonous substances, grains of sand, flies, &c. Excepting when ophthalmia originates from some cause of this kind directly applied to the eye, it will be found, like other inflammations, not only to arise out of general disturbance of the system, but absolutely to have been preceded (by hours, days, weeks, or months, as the case may be) by manifest symptoms of general derangement of health. Nor should it be forgotten, that many of the circumstances cited by patients, as ample cause and ground for their complaint, would have had no such effect, had not some state of system enfeebled the constitutional resistance to the impressions; and so rendered them prone to such affection. A man who has many hundreds of times been exposed to the cold night air, without suffering injury to his eyes, shall, on some subsequent occasion, (his general health being impaired,) trace an ophthalmia to such exposure. The same may be said of persons who read, write, or otherwise greatly exert this important organ.

It will not be necessary minutely to detail all the symptoms of acute inflammation, as they occur in the different structures of the eye. In all cases, with the exception of swelling, the five local signs of inflammation above enumerated will be more or less present, and somewhat in the degree above mentioned, according to the structure

affected. If the conjunctival membrane be the chief or only seat of inflammation, its secretions will be immediately affected: in the first instance they are diminished, and then it is that the peculiarly painful gritty sensation is most complained of. This state of things is pretty soon succeeded by an increased secretion from this surface and the lachrymal gland, the secretion being, however, altered in character, producing a sense of burning as it falls upon the cheek, and often being highly irritating and acrid, so as to affect the lids or cheek, and make them sore. If the transparent cornea be affected, some degree of turbidness of its texture, and vessels ramifying through it (invisible in health) will be apparent. The sclerotic coat gives evidence of inflammation in its early stage, chiefly by showing a zone of a deep pink colour around its margin, as it joins the cornea, owing to the distension of its numerous minute vessels. The iris, when inflamed, obeys the stimulus of light, and contracts with pain, and its contractions speedily become somewhat irregular, as the distended vessels, and the effusions, the product of inflammation, glue down its delicate structure; the pupil thus ceases to present the beautifully uniform circular appearance which it does in health. More or less pain and throbbing in the temples, as well as the eye itself, may accompany most forms of ophthalmia. The system sympathizes more or less with the local affection according to circumstances; chiefly to its previous state, to

the degree and seat of the local affection ; much, often, when the deeper seated structures are affected, but little, generally, when the conjunctiva only is the seat of disease. Thus we may have what is called irritative fever ; diminished, and vitiated secretions of the bowels and kidneys ; dry and hot skin ; furred tongue ; frequent pulse, with or without hardness.

This, which may be called the first stage of inflammation, may continue for various periods of time, dependent upon the previous condition of the patient's health, the character of the exciting cause, the intensity of the local disease, and his management of himself, whether as respects the eye or his general health, or the management he may have experienced on the part of his medical attendant.

If the further progress of disease be now arrested, and the eye return to its natural healthy condition, the cure by resolution may be said to have occurred. How is such cure to be effected ?

The only sound basis on which practical medicine or surgery can rest is, that of practical experience, and careful observation of facts, by which the experience of the past is made to bear upon the present case. It is only in later years that medical theories have been built upon a secure foundation ; viz. the generalization of facts ; theories not so constructed have proved most baneful in all departments of our profession. Thus one class of persons,

assuming that inflammation is an act of increased force, vigour, and strength, have considered the lancet, and other powerful depressing means, to be the only safeguard in the treatment of all forms of inflammation indiscriminately. Another class of persons have maintained, that inflammation arises out of an enfeebled state of the capillary vessels of the part, and have generally vindicated a stimulating and invigorating plan of treatment: rarely themselves adopting the use of the lancet, they cannot entirely deny its utility in all cases, but explain the mode of its successful application in accordance with their own views.

It would not be consistent with the object of this little work, to occupy the reader's time with a long dissertation upon the general subject of inflammation; suffice it to say, here, that inflammation, though in its commencement uniform as regards the local condition of the parts affected, is in its progress most different; and that according to the nature of the part affected, the previous condition of the patient, and the cause; inflammations differ as widely from each other, nay, more so even, than many diseases to which our nosological classifications have assigned different names and classes, and this especially as regards the treatment which should be adopted.

Rightly to explain, therefore, the motives of our treatment in any particular case of ophthalmia, we must look beyond the present state, and inquire what will be the

result of continued inflammatory action in this or that structure.

In all cases of ophthalmia the medical attendant should carefully inquire into the cause of the affection, and the previous condition of his patient's system. The more intimately he finds the local affection to be connected with conditions of general health, the more carefully must he endeavour to set the general health to rights, which will constitute the most important part of his treatment as directed to the eye; for however much it may be in his power, by local applications, to restore the eye to an apparent condition of health, such restoration will indeed be but apparent and temporary; like a smothered volcano, as the internal fire accumulates it will break forth again, if not perhaps in the same, in some other part of the system.

The next point will be carefully to estimate the force and intensity of the local disease, and to contrast this equally carefully with the character of the more general symptoms.

If very active and intense local disease be accompanied by great constitutional vigour and equally powerful general reaction, as shown in the height of the irritative fever and force of the general circulation, the lancet will probably not only be borne, but afford the greatest benefit. But intense local disease, with enfeebled general health, little power of reaction, and originating probably in ex-

citing causes, which have acted upon a previously impaired constitution, will ill bear such a mode of treatment.

The structures of the eye, acute inflammation of which most requires the use of the lancet, are those in which such affection is most liable to terminate in the deposition of coagulable lymph, and in which such result is most to be dreaded. Of all these structures, that of the iris is the one which most frequently requires such treatment, and next to it that of the transparent cornea. In the former the deposition of much coagulable lymph binds down this delicate moveable membrane, and often closes up the pupil entirely ; whilst in that of the latter total obliteration of the transparency of the cornea may result. When, however, the comparative infrequency of these forms of disease is considered, as also the many circumstances above hinted, as precluding the use of the lancet, it will be found, that upon the whole this instrument is far less frequently required in ophthalmic practice than either the works, the practice, or the general conversational opinions of practitioners would lead the uninitiated to suppose. Nor must it be forgotten, that we possess other means of inducing a powerful sedative effect upon the general circulation, as well as that of the part affected. I allude to the use of emetics, brisk cathartics, and nauseating doses of emetic substances, especially the tartar emetic—remedies, not only powerfully sedative, but often possessing the further advantage of removing from the alimentary canal injesta

or secretions which may have mainly caused or kept up the local disease, whilst they do not diminish the bulk of blood, and permanent powers of the constitution, on whose integrity we are often to depend for the future steps of restoration.

With the exception of very acute inflammation of the iris or cornea, occurring in persons of robust habit and unimpaired health, and with strongly-marked reactive symptoms, it is, perhaps, not too much to say, that no inflammatory affections of the eye, of spontaneous origin, require the use of the lancet. Purgatives, emetics, and the tartar emetic, in doses short of inducing vomiting, are sufficient to subdue or control the other forms of active inflammation.

In similar cases, another most valuable and important agent remains to be considered—mercury. The circumstances which require the use of this medicine are precisely similar to those which warrant the use of the lancet, with this exception, that whilst all those cases which demand bleeding require mercurial treatment, many cases in which the local disease is not sufficiently acute, or the constitution sufficiently vigorous to justify the use of the lancet, will be much benefited by the mercurial treatment. Here the inflammatory symptoms will be sufficiently subdued or checked by the action of the remedies above described, and the mercury must be given to check the further effusion of lymph, to promote the absorption and removal of

that which is already effused, and to restore the minute capillary vessels of the part affected to their former state of health. Nothing can be more beautiful than to witness the first appearance of regularity and roundness in the movements of the pupil which so often occurs as the system begins to get under the influence of mercury.

The best preparations of mercury, under these circumstances, are the blue pill and the chloride or calomel. I, however, generally prefer the latter, as being the preparation which most speedily affects the system. It is hardly necessary to say, that the combination of a small quantity of opium, with either of these preparations is often desirable, to correct their irritating effects upon the alimentary canal, and to prevent their passing off by the bowels, by which means also their action on the system is facilitated.

The abuses of mercury which have prevailed at no distant period of time, have left some prejudice on the minds of the public respecting the use of this medicinal agent. The profession at present, fortunately, are in less need of cautions on this subject than formerly ; it may not, however, be amiss to say a few words respecting its application in this branch of medical practice.

Merely as an aperient or alterative, the mercurial preparations properly administered, possess a value in ophthalmic practice not inferior to that in all other branches of medicine, and the reader's attention will be frequently called to this subject in after portions of the present

treatise; but it has been stated that in the more or less acute inflammations of those structures of the eye, most prone, under these circumstances, to the deposit of coagulable lymph, that mercury carried to the extent of salivation constitutes an important part of the treatment. From a laudable anxiety for the recovery of his patient, but from an over-anxious dread of the rapidity with which so delicate a structure may be hopelessly crippled by inflammatory action, most practitioners have fallen into the error of prescribing this remedy in much larger quantities than is either desirable or necessary; and, indeed, such practice not unfrequently defeats its own object, either by lowering the system to such a degree as to render it prone to the spread of the disease to other structures, or by impairing it in a more permanent manner, to the detriment of those after processes to which we are to look for the final restoration in all cases of local disease. I would urge, that although in these and some other cases of eye affection to be mentioned hereafter, mercury pushed to salivation is admissible, yet in many cases a careless use of this mineral may be most destructive.

In acute inflammations then of the iris, cornea, sclerotic and retina, (if indeed such ever occurs in an isolated form,) the first object of the practitioner is to check or subdue the violence of the inflammatory action: blood-letting may be required, but far less frequently, even in these affections, than is usually supposed; next to this, an

emetic, especially of antimony and ipecacuanha, presents us with one of the most powerful means of effecting this purpose. In either instance, this treatment may be followed by a brisk purgative; indeed it frequently happens that a good dose of calomel and colocynth, followed by a common black draught, is sufficient for this purpose. The force of reaction is to be then kept within bounds by smaller doses of the antimonials, perfect rest, (especially of the organ affected,) determination to the skin, kidneys, and bowels; and mercury is to be cautiously administered for the purposes above explained; if the disease shows a disposition to subside steadily under this treatment, the mercury should by no means be necessarily pushed to salivation; and it may here be observed, that in ophthalmic practice we have this great advantage, that the case affords evidence not only in its symptoms, but also by ocular demonstration, of the effects of treatment and the progress, or decline, of diseased actions.

It is hardly necessary to say, that this treatment should be aided by the strictest regimen, a total abstinence from all stimulating diet even of the lightest character. Barley-water, arrow-root, tapioca, and weak tea, in which a little bread may be sopped, should constitute the sole nourishment of the patient,—a diet which is alone no trifling antiphlogistic treatment. On a return to convalescence some improvement may be made in the patient's fare, but this should be done with the utmost caution.

When the iris is the chief seat of inflammation, or much implicated in the process, another important adjunct in the treatment deserves attention. It has been stated already, that inflammation of this structure is liable to induce permanent adhesion of its delicate fibres by the deposition of coagulated lymph; now as inflammation of every structure of the eye is liable to induce some degree of intolerance of light, it happens, that the iris contracts, in order to exclude as much as possible all rays of light from impinging on the retina, and hence permanent adhesions are most liable to leave the pupil fixed in its most contracted state; now belladonna, or the deadly night-shade, has the peculiar property of inducing dilatation of the pupil, and this, not only from its internal administration in poisonous doses, but also from the mere painting of the orbits, temples, and under ridge, with the extract, which is better than dropping a solution of it into the eye. Hence we are enabled to keep the iris in a more moveable condition, and to prevent such adhesion as might entirely, or almost entirely, obliterate the pupil, and exclude the admission of the rays of light. It must not, however, be supposed that belladonna so applied has any power in arresting inflammatory action, nor that, adhesion is the only process of danger which we have to apprehend in such cases. Another great advantage of this use of belladonna, and to which we shall have frequent occasion to refer hereafter, is, that by thus

dilating the pupil, it affords us great advantages in many cases of carefully examining the state of the deeper seated and more internal structures of the eye.

The preceding observations, more especially applicable to iritis, may be taken as the basis of treatment in the acute inflammations of the cornea, and sclerotica; it must, however, be remarked of the cornea, that the risk incurred from the deposition of coagulable lymph is due to the impediment thus formed to its transparency, and not to any influence in gluing down structures, the integrity of whose functions depends upon their separation, and free motion on each other; this catastrophe is to be sedulously avoided, but at the same time it should not be forgotten that considerable portions of effused lymph or other substances, the product of inflammation, may be removed by natural processes after the subsidence of inflammation. Such removal appears to be conducted much on the principles of ordinary nutrition, the minute capillaries, the working bricklayers of our system, working under the immediate superintendence of the minute nerves which accompany them, and both again under the influence of the master workmen, the system as a whole, removes the bad and lays down better materials, and thus the most minute and delicate structures of our system are repaired and set to rights, by the same workmen, and under the same laws originally implanted in them by an all-wise and all-pervading Creator.

The greatest amount of assistance to this process will be afforded by that practitioner who has the best and most extensive knowledge of the laws under which it is performed—*inflammation is no longer to be combated, increased force and vigour is required on the part of the whole system, including its great nervous centres, the blood en masse, and the minute capillaries of the part especially, all obstructions to the reparative process, whether local of the part, general of the system, or local of distant parts, as of the stomach, bowels, &c. are to be removed;*—and above all, some patience must be exercised on the part of the sufferer and his attendant; for repairs, whether literally of brick and mortar or of living structures, require time, more or less in great measure dependent upon the skill of the practitioner and the materials on which he has to work. No one medicine or class of medicines has any specific power in directing the process of repair; that of absorption or removal of the opaque deposits resulting from inflammation, is often accelerated by the cautious administration of a mercurial course; but it should be carefully remembered that the powers of the constitution are to be supported; and mercurials will never do good if administered to the detriment of these powers. The doses should be small, and they may often be advantageously combined with tonics. Sir Astley Cooper's old formula of the bichloride of mercury with bark is frequently useful in this state.

The cornea too is liable to ulceration, a subject to be treated of hereafter.

Inflammation of the sclerotic coat of the eye, it will be readily conceived, is less important, from the consideration of the mischief which may occur to this tunic itself, than from the risk that the diseased action should spread on to, and take possession of, the more delicate and important parts with which it is immediately in contact, especially the iris and cornea.

It now remains to speak of acute inflammation of the conjunctival covering of the eye—conjunctivitis.

The conjunctiva, if not exactly identical with, is at least extremely analogous to other mucous membranes ; and its inflammations, “ mutatis mutandis,” are liable to occur under similar circumstances, to run a like course with, and to yield to a similar plan of treatment with the inflammations of other mucous membranes.

Morbid anatomy has in these latter days given a degree of precision to medical practice, which was before unknown ; by its aid has the physician arrived at his present degree of certainty in discriminating between internal inflammations, and other diseases, whether situated in one organ or another, whether in the serous envelope, the parenchymatous tissue, or the internal lining membrane, (the mucous,) of each particular organ, and hence has he been enabled to decide with increased certainty on the effects of treatment as applied, under the circum-

stance of inflammation whether situated in one or the other structure of an organ. Now I believe that amongst the very best practitioners of the present age, if the lancet has not been entirely banished from use in the treatment of inflammation of mucous membranes, its use has been curtailed to such a degree as to have become (not as formerly) the rule, but the exception. How much more, therefore, must it be the exception in the instance of conjunctivitis—in inflammation of a membrane so infinitely small in extent as compared with other mucous membranes, in which too we have ocular demonstration of every morbid process as it goes on, and the advantage of making topical applications as well as combating the disease through the medium of the system at large; a membrane too, be it remembered, whose vital importance is as nothing compared with that of the air passages and the whole alimentary canal.

Although the conjunctiva is extended over the transparent cornea, inflammation of its structure usually commences in that part which lies over the dense opaque sclerotic coat; it is attended with pain, often extending to the temples, more or less constitutional disturbance of a febrile character, and at first a diminution of its secretion as well as that of the lachrymal gland. The conjunctiva being thinner as it passes over the transparent cornea, and more firmly attached to it than to the sclerotic, inflammation of it is apt to be attended with swelling of

this latter part, constituting what has been already explained under the term chemosis.

The treatment required for acute conjunctivitis, includes the use of the emetic substances ; especially tartar emetic, and active purging in the first instance ; a dose of calomel, combined or not, as the ease may require, with some antimonial preparation, or aperient, followed by the common black draught of senna and salts. If the inflammation be very severe an emetic may be found desirable. After the action of such remedies, our object will be by rest, abstinence, and determination to the skin, bowels, and kidneys, to keep down the force and frequency of the circulation, and with it the local inflammation. It is not, perhaps, too much to assert that hardly one case in a thousand of conjunctivitis requires the use of the lancet, nor should mercurials be prescribed with the view of affecting the system.

Even the ordinary acute conjunctivitis will frequently be found to be connected with states of general health which demand our attention, rather than the mere local affection ; it may be found to be but part of a "common cold," in which case the plan of treatment above suggested will be sufficient ; it may be connected with states of the digestive organs, an impoverished condition of the whole system, or scrofulous diathesis : in the former case, care must be taken to prescribe to the deranged condition of these important organs ; in the latter, we

must be the more careful not to reduce the powers of the system generally; topical applications will hold a proportionately more prominent part as regards the local affection, and alteratives may be required to take the place of brisk cathartics; a nutritious diet, with the use of some mild stimulant drink and tonics, may be administered even in an early stage of the affection.

The topical applications in use, in cases of conjunctivitis, as in most other affections of the eye, consist mainly in certain lotions, (when thus applied technically termed collyria,) with which the external parts of the eye are bathed; a small portion of which finds its way within the lids, from their margin becoming wetted with them, or the patient is encouraged to let a little fall into the eye; and certain remedies in a more concentrated form of which a drop or two is placed directly within the lids. Ointments are occasionally used in this manner, or the parts are sometimes touched with the solid stick of lunar caustic, sulphate of copper, &c.

As collyria, the simple element water constitutes the great base or menstruum of other collyria, and is often sufficient in itself. I am in the habit of recommending it to be used cold, even in the earlier stages of conjunctivitis, and generally with the best effects; it sometimes, however, happens, in these as in some other cases, that cold causes a disagreeable, whilst warm applications induce an agreeable sensation to the patient, and it is

always well to have respect to the sensations induced, which usually indicate with great certainty the degree of temperature not only most comfortable but most beneficial to the patient.

Of the medicated collyria some are chiefly narcotic or soothing, of which the common poppy decoction is perhaps as good as any, or a lotion made of two drachms of the extract of conium, suspended in a pint of water; others are astringent, as that of the sulphate of zinc, two to three grains to the ounce, sulphate of alum, or the two combined, which may be suspended in rose water instead of distilled water; of these lotions, when required, it is desirable to allow a small quantity to get into the eye. A small proportion of *vinum opii* may be added to these washes. The common Goulard lotion, with or without the addition of a small proportion of *vinum opii*, proves also an excellent collyrium.

These lotions may be all applied warm, tepid, or cold, as described in speaking of the simple element water. Their employment should rather follow than precede the use of those measures of general treatment resorted to with the view of diminishing general febrile disturbance and the activity of the local affection.

More important than the collyria are the various substances used to drop into the eye; from the more or less concentrated form of these preparations, their first effect

is usually to act as powerful local stimulants, causing increased pain and redness of the part; they soon, however, become diluted by their admixture with the lachrymal secretion, which it is their further effect very speedily to increase,—an effect which probably constitutes no small portion of their efficacy. Some of the substances thus used have a direct tendency to induce contraction of the capillary vessels to which they are applied, as the saturnine solution (or liquor plumbi diacetatis) and the solutions of nitrate of silver; others appear chiefly to owe their efficacy to their secondary effects, after their stimulating powers have passed off, and to their increasing the secretions of the part by which the blood-vessels are unloaded and relieved. The vinum opii is the agent most frequently employed for this purpose, and the combined effect of both may be often usefully obtained by the solution of a grain of nitrate of silver in half an ounce of the vinum opii. These stimulating applications should, as a general rule, be withheld till after the use of constitutional treatment, and the cases best adapted for their employment are the forms of conjunctivitis, connected with an enfeebled constitution, lax and flabby habit, and in which congestion of the blood-vessels constitutes the most prominent symptom of the local affection. In such cases the tears trickling down the cheek, instead of inducing a hot burning sensation,

often actually give rise to a sense of coldness. The more the case seems allied to, or disposed to run into, chronic inflammation, the more appropriately may these agents be employed.

The nitrate of silver in solution, applicable to many other forms of ophthalmia, as will be presently shown, demands more especial notice in connexion with the present subject. If used in strong solution, the nitrate of silver, immediately on its application, induces the same effects as the *vinum opii*, viz. increased pain and redness of the part, which is not followed by any amendment for some hours; but we have the advantage of being able to dilute this substance to such an extent as to avoid this effect, whilst we obtain its sedative and astringent properties of inducing the distended blood-vessels to re-contract upon their contents. It is more commonly the fashion to use rather a strong solution of this substance from the very first; the stimulating effects of which are often such as to oblige the practitioner to refrain from its further use, and sometimes even to have recourse to local or general bleeding, or other powerful means to subdue the increased degree of inflammation. I believe that this effect would always be avoided by beginning with a very weak solution, which may be gradually increased each day in strength. I frequently begin with one grain, or even half a grain to the ounce of distilled water, and it is often perfectly astonishing, to witness the rapid de-

crease of inflammation under the use of so mild an application. I have rarely found it necessary in any form of ophthalmia to increase the strength of the solution to above six grains to the ounce, a maximum which but represents the minimum in the scale of the practitioner of many other persons. The more stimulating drops appear to have a more decided action when used at long intervals, hence I seldom order them dropped into the eye except on alternate days.

In these and other forms of ophthalmia the system of fumigating the eye with the vapours of various drugs has been often recommended; the practitioner which, as regards the æthers and some other substances, is of old date, has been somewhat recently revived in favour of hydrocyanic acid. Of the effects of the latter agent I have no personal experience, but I may venture to predict that its use will be found to fail of inducing the benefit which some persons have attributed to it; of the former remedies I can only observe that they have proved unquestionably useful, but that their necessity is quite superseded by the much more effectual, simple, and convenient practice of dropping substances into the eye of the character which each case may require.

Another practice which has been highly extolled in some forms of conjunctivitis, is searification of the vessels of the inflamed part with the edge of a lancet or very sharp scalpel; the efficacy of this practice

depends upon the division of the distended vessels, by which they become emptied, and contract to their natural dimensions; and the local abstraction of blood. In some very severe forms of conjunctivitis this practice is very useful, especially where extensive chemosis exists, in which case it has the further advantage of relieving the part from the serum and other products of inflammation, which, lodged between the layers of the membrane, constitute the main source of the swelling. The operation, though by no means difficult, requires a little delicacy of touch, and if employed, as indeed it should be, only in the severest forms of conjunctivitis, is by no means very painful, the relief that it affords being more than equivalent to the inconvenience.

It may appear strange that in the whole course of this chapter on the acute inflammations of the eye, no mention has been hitherto made of topical bleeding by means of leeching or cupping. The fact is, that although the acute inflammations of the eye are the cases which most often stand in need of, or may be benefited by this treatment, yet even in these cases I believe the profession rather require to receive a check than an encouragement; and in many other diseases which I shall have to speak of, there exists no doubt, (in my own mind at least,) that the practice more frequently constitutes the error than its omission. Cupping and leeching have much the same influence in the different forms of ophthalmia as in

other inflammations ; and although, in some instances, in which the local affection is sufficiently acute and severe as to threaten permanent mischief to the parts affected, whilst the powers of the constitution are not such as to warrant the use of the lancet, these measures may be with great use and propriety resorted to ; yet I cannot blind myself to the fact, that both in ophthalmia and other diseases many an ounce of blood is sacrificed to a mere routine practice without the slightest advantage to the patient as regards his permanent recovery, and often, indeed, in the cases to be mentioned, with manifest permanent injury to the part and the system. Where the ease is sufficiently urgent to require, and the system in a condition to bear general blood-letting, local bleeding can answer no good purpose. It is not here meant to be asserted that bleeding from the arm may not be required one day, and leeching or cupping the next or some days after, from the very circumstance that the inflammatory action may return with considerable vigour whilst the system is less capable of supporting a second bleeding ; but the practice which I reprobate, and which I have often seen employed, is that of prescribing, at one and the same time, both local and general bleeding. In the majority of cases of conjunctivitis, however, the plan of general and local treatment above described, with a careful consideration of the constitutional state out of which the disease may have originated, or with which it

may be complicated, will answer every purpose required, without the necessity for either general or local blood-letting.

Other modes, and these by no means insignificant, present themselves of relieving the capillaries of one part of the system by determining an increased flow of blood to others. The hot pediluvium, the warm bath, and dry-cupping, are amongst the best of these measures.*

Counter-irritation requires to be noticed here, as amongst the most powerful of our resources in combating inflammatory affections; counter-irritation, of whatever kind, is however more applicable to the chronic than the acute forms of inflammation, and should never, according to my own experience, be prescribed in the acute diseases at least, until some other measures of general treatment have been adopted, for the purpose of diminishing the activity of the local disease, as well as the constitutional disturbance..

* The most remarkable circumstance which has occurred in the medical profession for many years, is the position taken by Dr. Dickson—that blood-letting of any kind is entirely inadmissible. Not that he denies to it powerful effects, which may be in some cases curative; but that he considers such effects are only safely and judiciously to be obtained by other means. Dr. Dickson has maintained his point with great talent and ingenuity, and at least deserves the merit of having already done much to curtail the mischief of the lancet: and should his point be ultimately established to the satisfaction of the majority of the profession, he may be considered as having originated one of the most extraordinary revolutions that has ever been witnessed in the healing art.

The various forms of counter-irritants applicable to cases of eye-disease, are blisters, agents producing eruptions, as tartar emetic, &c., setons, and issues: their efficacy is probably due to a two-fold action; the counter impression made upon the extreme branches of nerves possessed of one common trunk, and the effects upon the minute blood-vessels and their contents, first in determining an increased flow of blood away from the seat of disease to other parts, and subsequently in inducing various forms of secretions, whether of serum or puriform matter from these vessels. From the rapidity with which they act, as also the extent of surface to which they are applied, blisters are more convenient, in proportion as the case approaches to the acute character; whilst tartar emetic ointment, and agents of this kind, although applied to an extensive surface, like setons and issues, require some days before any very copious puriform discharge is established, and are therefore more appropriate in the more chronic forms of disease, and the two latter agents especially, when the deeper-seated structures are mainly implicated. Blisters are usually applied to the temples, behind the ears, or to the nape of the neck. The two latter situations are preferable, and the last, when it is desirable that the blister should be very large. Setons or issues are used chiefly in the nape of the neck or arm.

Blisters are by no means very lowering, if their application be confined to one or two small or moderate-

sized ones, unless, as sometimes happens, that some peculiarity of constitution renders the patient especially susceptible to their deleterious effects; they are therefore especially useful in those cases of ophthalmia, whatever may be the structure affected, which are connected with a low and feeble condition of general health, and in which it is desirable to obtain local relief at the least possible cost to the constitutional powers. The same, however, can by no means be affirmed, either of blisters frequently repeated or of setons and issues, which by keeping up a long-continued and copious drain upon the system, slowly and insidiously, perhaps, but surely, impoverish the blood, and with it the constitutional powers. Such remedies are therefore by no means lightly and carelessly to be prescribed and persevered in.

The natives of India are in the habit of using a liquid which they drop into the ear in cases of ophthalmia, and which appears to owe its beneficial agency to a diametrically opposite mode of action to that of counter-irritation. No pain or inconvenience is experienced to the ear, and yet a soothing influence seems to be propagated to the eye. When first I heard of this practice, I was disposed to consider it as altogether hypothetical; but I must confess, that personal observation of its effects in the hands of the native practitioners, as well as numerous subsequent trials made by myself, have induced me to believe this practice to be, in many cases, highly efficacious. When

I explained to one of the native doetors, who employed this remedy, by means of a rough diagram, the nervous connexions between the eye and the ear, he could not coneal his satisfaction. I do not know the exaet nature of this substanee, but I suspect it to eonsist of narcotie and sedative ingredients. To the intimate relationship between the eye and ear, from the distribution of nervous filaments arising from a common trunk, is due, no doubt, the degree of sympathy so often observed to exist between these parts in various forms of disease, and to the same anatomieal relationship is probably to be attributed the effieaey of this remedy, acting, no doubt, in the same inexplicable manner as many narcotie sub- stanees in ordinary use do, when applied externally for the relief of internal disorders. It may be remarked of this remedy, although deviating from the strict subject of our present investigation, that it is no less highly es- teemed by the native doctors in many forms of deafness ; and I have myself had ample experience of its efficacy in some eases of this affection, having, during my residence in India, paid considerable attention to diseases of the ear as well as those of the eye.

CHAPTER III.

CHRONIC OPHTHALMIA—STRU MOUS OPHTHALMIA—STRU MOUS OPHTHALMIA,
WITH PUSTULES—RHEUMATIC OPHTHALMIA—INTERMITTENT OPHTHALMIA
—SYPHILITIC IRRITIS—GONORRHœAL OPHTHALMIA—PURULENT OPHTHAL-
MIA—OF INFANTS—OF ADULTS—EFFUSION OF PUS IN THE ANTERIOR CHAM-
BER—EGYPTIAN OPHTHALMIA—INFLAMMATION OF THE WHOLE BALL OF
THE EYE—VARIOLOUS OPHTHALMIA—OPHTHALMIA FROM MEASLES, SCAR-
LATINA, ERYSIPelas, &c.

THE term chronic, literally referrible to the time occupied, is applied to diseases in contradistinction to acute, and is usually supposed to imply that the disease, though in many of its great features analogous to the acute form, is yet less intense in character, attended by less constitutional disturbance of a febrile nature, and runs through its different stages or whole course more slowly. In the inflammation, however, of the eye, as of other parts, no definite line of demarcation exists between the chronic and the acute. The acute form may run into the chronic, whilst the latter may experience temporary exacerbations entitling it to the appellation of acute.

The state of the tears will sometimes mark a distinc-

tion, and it is always of importance to inquire whether they feel hot or cold when falling down the check.

The general observations made upon the different forms of acute inflammation of the various structures of the eye, will serve as a foundation for the treatment of the chronic inflammatory affections of each part, bearing it in mind that as the local diseased action is milder, so may the treatment be ; and as it is also more continued, so also will the treatment require to be persisted in for a greater length of time, and increased caution will be necessary to eradicate the disease and put the patient in the best condition to prevent a recurrence of it. This caution is the more requisite, in that however frequently the acute forms of ophthalmia may depend upon constitutional causes or tendencies ; the chronic forms almost constantly do ; and this, too, is a sufficient reason in these cases for directing our attention with increased care and vigilance to the constitutional conditions of our patient.

It will not be necessary to take up more of the reader's time on this subject. Many particular forms of ophthalmia require an especial notice, of which some may be considered as acute, others chronic.

STRUMOUS OPHTHALMIA.

Two forms of inflammation of the eye are especially liable to attack persons of a strumous constitution ; they

are often combined in the same individual, and sometimes found to exist separately. These attacks frequently occur without our being able to trace them to any especial injury done to the eye itself, either in the shape of cold, fatigue of the organ, glaring light, or mechanical injury ; on the contrary, the accession of the attack is much more frequently traceable to causes of a much wider range,—deprivation of the necessities of life, overloading of the stomach, exposure to cold and wet, wet feet, &c.

The former of these affections, to which, for convenience of description, the term strumous ophthalmia may be restricted, much more frequently attacks children than adults. The little patient is found thrusting his head in the bed-clothes, or, if up and about, selecting the darkest corner of the room, and covering his eyes frequently with his hands, or something impervious to light, as his pocket-handkerchief or pinafore ; at first he does not appear to experience much uneasiness so long as he can keep free of light, excepting, perhaps, that his digestive organs are found to be deranged, his appetite vitiated or impaired, his bowels relaxed or very costive, and the alvine secretions unhealthy. His sleep may be somewhat restless, he may have pain in the head, and some slight febrile disturbance. The tongue is generally white and loaded.

On attempting to examine the eye the little patient shows the utmost reluctance, and the orbicular muscles

are closed by an almost convulsive spasm, that it is difficult and not always prudent to attempt to surmount. If we do succeed in partially opening it, a gush of tears generally flows out, which are often very hot, and the patient is seized with a violent fit of sneezing. The eye is commonly found to present morbid appearances very slight as compared with the extent of the patient's suffering; the conjunctiva may, however, be more or less red, and occasionally presenting minute vesicles or pustules over the transparent cornea, a state constituting the condition about to be noticed as the second form of strumous ophthalmia.

Great intolerance of light, however, constitutes the most remarkable feature of this form of ophthalmia; for it not unfrequently happens that as the night approaches or if the day turns out extremely cloudy, the patient is seen running about with his eyes wide open as if nothing ailed him.

Few forms of ophthalmia are more readily curable than this, and yet few require greater firmness and energy on the part of the practitioner to enforce those measures of discipline, whether referrible to medicines or diet, which are to make the enre stand good, and prevent such recurrences of the disease as may in the course of time prove most disastrous to his patient.

The first object in these cases is to correct the condition of the digestive organs; if the attack should have

come on in connexion with eating a considerable quantity of some very indigestible substance, which we have reason to suppose has not yet passed through the stomach, the treatment should be commenced with a mild emetic. This, however, is not very often required. If the bowels be much loaded and costive, I usually give a brisk purgative of calomel, with scammony or jalap, or the three combined; if, on the other hand, they are somewhat irritable and relaxed, the evacuations being unnatural, as is almost invariably the case, I prefer the combination of grey powder (*hydrargyrum eum cretâ*) with rhubarb, to which a small proportion of powdered ipecacuanha, or in some cases, even of the compound ipecacuanha (Dover's) powder may be advantageously added. After some hours this powder may be followed up by a dose of castor-oil.

It was said that much effort should not be made to open the eye on first seeing the patient, lest injury should be done to this delicate organ: very great urgency of symptoms, or a long previous continuance of the disease, may however occasionally render this desirable, if there be any suspicion that more than ordinary local mischief has occurred; but the fact is, that any violence is rendered the less necessary from the almost miraculous effect of this apparently so simple treatment. Without any other measure having been adopted, it frequently happens that soon after the action of the medicine the child goes about as if nothing had happened, or at least

there is (and that most commonly) such an amendment as that we are easily able to examine carefully into the state of the eye. Such relief, however, even if entire, is rarely permanent, and unless other measures be adopted the local affection soon relapses into its former condition.

Too great light and over-exertion of the organ should be strictly prohibited for some days; the diet, if the patient has been previously stuffed, should be below par both in quantity and quality of nourishment, to give the stomach time to recover its wonted tone and powers; if, on the other hand, the patient, (as too frequently happens amongst the poor) has been ill-fed, a nutritious, but light and spare diet, should, if possible, be procured. In this case the patient may have been accustomed to make up in bulk what was wanting in quality in his food, and thus we find a system requiring support, but an exhausted and enfeebled stomach at first unable to assimilate wholesome food in the degree required.

The state of the digestive organs will probably require a repetition of the aperient powder in the course of forty-eight hours, or at least of the alterative; the doses of the mercurial preparations should be diminished, under the probability that they may require to be repeated several times before the termination of the cure. The state of the alvine, as well as the other secretions, will be benefited by a little course of saline medicine, and if there still exist some little febrile disturbance, a combination of soda and nitrate of potass will be found an excellent medicine;

to this a little antimonial wine, or of the emetic tartar salt itself, may sometimes be advantageously added. If the local affection appears to have received a decided check, and no febrile action remains, the use of mild tonics may be speedily commenced, and in cases in which the flabbiness of the muscular system, paleness of the skin, and other symptoms, indicate a very impoverished condition of the frame, such plan may be commenced from the very first. Amongst the best tonics are the light vegetable bitters combined with alkalies, quinine in small doses, and steel. The modern citrate of iron affords an elegant preparation of this substance for these and many other purposes, but in these cases I must confess a partiality for the vinum ferri of the former pharmacopœia, which is by no means unpalatable. The addition to this of a small quantity of liquor potassæ, is often extremely serviceable.

The usually tender age of the patient, and the very palpable evidence of a poor feeble condition of the general health, has mostly secured the victims of this affection from that once baneful panacea, the lancet; but it has not been sufficient to secure them from local bloodletting. The leech has been amply patronized! And can it be conceived that men daily exercised in the study of human life and health, in observing the uses, the quantity, the quality of the circulating fluid, in calculating upon the powers and resources of the system, boasting a skill in prognosis which enables them to tell within a few months,

weeks, days, or hours, how long the system can hold out. Is it possible, I repeat, that such men can overlook the effect of the frequently-repeated abstraction of two or three ounces of life-blood, from a poor feeble serofulous patient, and that too at a period of life when rapid growth demands even more supplies than it can obtain ? Though much less in vogue now than formerly, the partial continuance of this practice is the rather to be feared, and therefore to be deprecated, that it is often attended by temporary relief. What wonder? Increased vascularity of the part forms a large item in the total of the local phenomena, and therefore the abstraction of blood from the neighbourhood affords a large amount of temporary relief; but I have, over and over again, seen such relief obtained, only to be followed by worse attacks, and these to be again combated by the leech, to the no small detriment of the system and the part; whilst the permanent cure (such a one as it may be) has been due to the almost compulsory administration of tonics and better diet, as the patient's general health became more visibly impaired ; nor have these measures always been able to wipe away the mischief of the previous treatment.

If the ease prove very obstinate, a small blister to the nape of the neck, or behind the ear, or the use of the tartar emetic ointment, may be employed with advantage : such treatment is less weakening, and does not rob the

system of its blood en masse ;—it will not, however, be often required when sufficient attention has been paid to the other indieations.

Little or no local treatment is required beyond the occasional bathing the eye with water, unless vesicles or pustules be observed in the cornea, in which case the local applications presently to be mentioned when speaking of that subject may be used.

VESICULAR OR VESICULO-PUSTULAR OPHTHALMIA.

This form of the disease is eharaeterized by the appearance of one or more small pimples formed generally about the edge of the cornea, but which may spread from thence to, or even at first arise in the centre or any other part of this structure. Like several forms of skin disease, these elevations are at first vesicular, semi-transparent, and containing lymph, but in the course of a short time either the placee of the lymph is supplied by pure pus, or at least it beeomes opaque, and the eruption possesses all the appearance of a pustule. A number of minute and loaded blood-vessels are seen to converge to, or diverge from, these vesieles, generally sufficiently visible to the naked eye. This affection is very frequently, indeed mostly, found to be connected with a strumous constitution ; it is attended with more or less intolerance of light, and inability to apply the organ to its usual exertions. It is not unfrequent amongst children, but perhaps more

so about the age of puberty, and becomes less frequent in advancing years. It is often seen in connexion with other co-existing symptoms of a strumous constitution, as enlarged absorbent glands, and I have frequently observed it in connexion with various forms of skin-disease, as herpes labialis, eruptions of the scalp, or behind the ears, eczema of the wrists and other distant parts, &c. The immediately exciting causes, as in the last instance, are generally found to be of a constitutional character.

This disease may be said to oscillate between the acute and chronic. The length of time that it will sometimes continue, and the slowness with which one pustule disappears and another takes its place, entitle it to the appellation of chronic, whilst the presence of a great number of pustules, with a correspondent degree of vascularity of the conjunctiva, pain and sealing of the tears, the extreme rapidity of their growth threatening to leave the whole cornea dim and opaque, either from the erosion of ulcers or the deposition of lymph, give it a fair claim in these cases to be called acute.

In most forms of this affection the treatment may very properly commence with an alterative and aperient, a few grains of calomel or blue pill, followed by an aperient draught, either the common black dose, or rhubarb and magnesia, rendered, if necessary, more active by the addition of some infusion of senna or a drachm or two of the tincture, or of jalap. In the acuter forms, an emetic, or

nauscating doses of the tartar emetic may be required, and a few leeches applied as near the eye as possible, followed by a blister to the nape of the neck, or behind the ears, proves highly beneficial as affording some temporary relief. The present mode, however, of using nitrate of silver renders this treatment but rarely necessary. Such treatment, however, only affords temporary relief, the permanent cure depends upon constitutional management. The lancet, I might almost venture to affirm, is never required.*

* The following interesting ease of this affection may tend to show that such cautions respecting the use of the lancet are not yet rendered unnecessary.

In the spring of the year, 1840, I was sent for to see Miss —, a young lady about eighteen years of age, whom I found labouring under strumous ophthalmia, with numerous pustules, rendering the cornea very opaque, and obstructing vision. In the eye least severely affected I observed a nebula in the centre of vision, the result of a previous attack. There was more than ordinary pain and vascularity, the tears produced a burning sensation. There was a low degree of febrile re-action, and the tongue was furred. The patient was evidently of a serofulous habit, although a fine, well-made young person. Her complexion was fair, she was rather thin, and the muscles generally flabby. She had not menstruated for many months. I ordered eight leeches to be applied to the temple, a dose of ealomel and antimonial powder at bed-time, a black draught in the morning; a blister behind the neck, and cold saturnine lotion to be kept over the eyes. I was surprised to find a little whispering, with suppressed smiles, amongst the patient's friends; implying, as I thought, some doubt; when the lady's mother said to me, "Are not you going to order my daughter to be bled, doctor?" "No, madam?"—"Nor yet cupped?"—"I don't see any necessity!" "Well, but surely eight leeches

The general management most required in these cases, consists in attention to the state of the bowels, not only

won't do any good." She then explained to me that her daughter had experienced many of these attacks, that her former medical attendant had by dint of great skill and very strong measures, brought her through and saved her sight. His plan had consisted in copious blood-lettings, cupping and leeching, and I am afraid to say how many ounces of blood had been removed by the lancet and the cupping-glass, or how many dozen of leeches had been applied. Blisters, too, had been used with equal profusion. The present attack, she assured me, was even worse than any preceding one, and there had been some delay in selecting a new medical adviser in the absence of their former friend. I explained the motives of my plan of treatment, the nature of the affection, and the state of constitution of the young lady, failing under repeated attacks of disease combated by still more formidable remedies ; at the same time I said I should be most happy to decline the case, or to submit it to the conjoint opinion of some other competent judge. I was requested, however, to take charge of the case. The next day I found some little improvement, and I ventured to commence the use of the nitrate of silver, half a grain to the ounce. I ordered her steel, occasional alteratives and aperients, and I had once more to repeat the leeches, and twice more the blisters. I gradually increased the strength of the caustic solution. The case, as might be anticipated, proved very tedious and obstinate, but at the end of six weeks I had the pleasure of seeing my patient recovered, without a speck left from the pustules—the former nebula considerably diminished— —the catamenia established, and the general health and appearance such as she had never been before known to enjoy.

At this time I am in attendance upon a young lady for a similar affection. She had been copiously leeched, and kept for four months confined in a darkened room to her home, with heating bandages over the eyes. No possible amendment could take place under the circumstances of such confinement, which had reduced her to such a state of nervous debility, that she could not be

as regards their regularity of action, but the character of the secretions. A light nutritious diet properly regulated as to quality and periods of exhibition. Promotion of the capillary circulation in the extremities, by warm clothing and proper exercise; the exhibition of tonics, the alkaline salts and steel, as recommended above. Change of air is often extremely beneficial, and especially that from cities, to the country or sea-side. Seabathing is very useful, as also the shower-bath. Sedentary habits should be avoided, as also the relaxation of very hot rooms, especially bed-rooms, and down beds and pillows—and in fine, everything should be done to promote the energy and vigour of the system. Frequent bathing of the eyes with cold spring-water, or some mildly astringent collyrium, should be enjoined.

Many local applications to the eye have been greatly recommended, the vinum opii, the liquor plumbi diacetatis, solutions of sulphate of copper, the unguentum hydrargyri nitratis, or hydrargyri nitrico, oxydum, &c. These applications have all of them proved very serviceable,

spoken to without bursting into tears. The bandages I quickly removed—sent her for a walk several times in the day for a short period, into the parks, ordered a generous diet; this and a course of quinine soon brought on a rapid improvement, both in the state of her eyes and general health. In this case the catamenia had been stopped for four or five months by the continuance of the antiphlogistic treatment. Since writing the above, I have had the satisfaction of seeing this patient quite recovered in every respect.

their mode of action being simply as local stimulants. Since, however, I have had experience of the use of a solution of the nitrate of silver, I have rarely had recourse to any of these agents. The nitrate of silver if used in the first instance, in a very diluted form, appears to me to act as directly sedative upon the distended capillaries, and it has this advantage, that it gives no pain and never aggravates the intensity of the inflammation. I often begin with it as weak as one grain, or half a grain to the ounce of distilled water, increasing the strength gradually. The lower lid should be held down, and a camel-hair pencil dipped in the solution drawn across the eye at its lower margin. The effects of this treatment are truly wonderful, and if the use of it be preceded by an alterative and active purge, but little necessity will be found for the application of leeches. The benefit thus derived should not, however, allure the younger practitioner from the necessity of enforcing those general measures of treatment on which his permanent success depends.

Scarification has been recommended in these cases on high authority. It may, no doubt, appear a very summary means of cure, to divide the bundles of loaded and tortuous vessels that are seen running across the transparent cornea; but it must be remembered, that the vessels which are to-day doing the mischief, are to-morrow performing the cure. For myself, I can neither

advance theoretical views or practical experience in favour of such practice.

RHEUMATIC OPHTHALMIA.

Ophthalmia is sufficiently often found in connexion with rheumatic affections, to warrant us in describing rheumatic ophthalmia as a specific disease. That such affections are really part and parcel of the rheumatic affection, is rendered too the more probable, in that those structures of the eye are most frequently affected under these circumstances, whose structural resemblance is the most analogous to the fibrous parts ordinarily affected by rheumatic inflammation, as the iris, and more especially the sclerotic coat.

In a practical point of view, the advantage of such distinction is, perhaps, not a matter of great moment, that is to say, the treatment of rheumatic inflammation of the eye does not very widely differ from that of ordinary inflammation of the same tissues, provided the local disease be equal in degree; it, however, affords an instructive example of the necessity for taking those wide and enlarged views of so-called local affections that I have before advocated. What can be more instructive or more interesting, in a pathological point of view, than to observe that not the eye, but a single structure of that organ, less perhaps than a tenth part of the whole, suffers from one common influence with the dense, firm, and,

compared to it, gigantic structures, which bind together the great moving masses of our frame? Can anything more distinctly point out the necessity for the oculist being a physiologist and pathologist in the fullest sense of these words? If it would be absurd for the physician, in a case of acute rheumatism, to direct all his attention to the joints or other structures most ostensibly affected, it would be no less absurd for the oculist, in a similar case, to direct all his attention to the eye. With the eye, as with the joints, the local disease comes out of the general one, and will probably disappear with it;—in the one case, as in the other, just so much attention is required to the local affection as will prevent such local organic changes from taking place, as would prove destructive to the function of the parts affected, with this difference only, that in the eye we have to deal with structures more delicate in function, more minute in size, and whose proximity with other parts renders them more obnoxious to the effects of organic changes, however slight.

The affection of the eye will be found mostly to correspond in degree with the more general disease; that is to say, blood-letting and other powerful antiphlogistic remedies will rarely be required for the ophthalmia, where the general nature of the rheumatic affection, taken with the condition of the patient, would not have required, or at least warranted such treatment, had the eye itself not been affected. For the rest it may be stated, that blood-

letting, whether general or local, is proportionately less required in these than in other cases, inasmuch as the local disease is so palpably connected with a general state of system, which more especially demands our attention. In the acute forms, and especially if the iris be much implicated, the calomel and opium treatment should be prescribed, as being alike beneficial in removing the general disease, and in arresting the progress of such local changes as are likely to prove injurious to the eye itself. Salines, with some preparation of eolchicum, may be combined with this treatment or prescribed alone, when there appears no necessity for the calomel and opium. I prefer the wine of the seeds, to that of the bulb; it being more generally to be depended upon.

If the rheumatic affection be of a low, eaeheetie form, guaiacum, with ammonia, bark, quinine, and other aromatics and tonics, should be prescribed. And if the fibrous envelopes of the bones, the periosteum, be the part chiefly affected, whether originating in the syphilitic poison or not, (which it is not always easy to ascertain,) the greatest benefit will be derived from alterative mercurials with Dover's powder, and, above all, iodide of potassium ;—this treatment may also be combined with bitters, aromatics, and alkalies.

In all the more chronic forms of rheumatic ophthalmia, benefit will be derived from the warm bath, medicated or not, as the ease may be; or the vapour bath.

In many instances counter-irritation, whether in the form of a blister behind the ear;—or more especially mustard cataplasms, stimulating embrocations or pediluvia to the extremities, will be found useful.

INTERMITTENT OPHTHALMIA.

One of the most singular forms of ophthalmia is the intermittent. This affection is sometimes observed to occur in connexion with ague in the same individual, but not always; it is, however, rarely witnessed in any but aguish districts. The structures most frequently affected, according to my own observation, are the conjunctiva, and next to it the iris and sclerotic coat. But little attention is generally required to the eye itself: for the inflammation, though severe at the time, appears to subside perfectly after the fit has passed by. It may, however, in some cases, be desirable to use some topical applications, as cupping, leeching, or bleeding; in my own experience, I have usually found the disease readily curable by the use of such remedies as cure ague; the quinine, bark, arsenic, &c. Such treatment, however, may require the same preliminary measures to insure its success in this case as in the instance of pure ague. In which case it may be preceded by the exhibition of an emetic or brisk cathartie.

SYPHILITIC IRITIS.

The syphilitic poison is extremely apt to induce inflam-

mation of the eye ; and of all structures the iris is the most liable to be thus affected.

Syphilitic iritis, as regards the local phenomena to which it gives rise, does not materially differ from the ordinary inflammation of this delicate structure, but its treatment frequently requires the utmost nicety and caution on the part of the practitioner ; for whilst the peculiar nature of the part renders it prone, under the influence of inflammation, to the deposition of adhesive or coagulable lymph, (and such results, in even a slight degree, threaten irreparable mischief to the organ,) and whilst blood-letting and mercurials offer our most powerful means of combating such forms of disease ; yet it frequently happens that the patient who consults us for syphilitic iritis, presents a constitution already broken down by the combined influence of the disease and the remedies already used. And this is the more likely to occur, in that syphilitic iritis rarely presents itself as the first or only secondary symptom, but is usually observed in combination with a variety of other secondary affections.

When syphilitic iritis presents itself in an early stage of the disease, whether primary or secondary, if the patient be strong, his constitutional powers but little impaired, and the disease assumes a high inflammatory character, the business is simple enough ; the case may be treated as one of ordinary iritis, mercurials, at least,

if cautiously and properly administered, are equally beneficial, both as respects the local disease and the systematic one out of which it springs. As respects the antiphlogistic treatment, however, it must not be forgotten that this should be pursued with great caution and nicely, as a treatment preservative of the eye, not curative of the disease as a whole. An active antiphlogistic treatment pursued in syphilitic affections not complicating the eye, would be justly condemned as injurious; when an affection of the eye does complicate it, therefore, we should prescribe such treatment with caution. Nor must it be forgotten, that a great number of the morbid phenomena which arise out of syphilis are of a low, insidious, and destructive character. Prostration of strength, loss of flesh, deficient nourishment of parts, as marked in some forms of the skin disease, and the falling off of the hair, softening and erosion of the bones, local inflammations running into destructive, sloughing, phagedænic ulceration! With this before his eyes, the practitioner should be careful how he lowers the powers of life in a person labouring under syphilitic disease; and with this view it is that, in syphilitic iritis, unless under extraordinary circumstances, I prefer the local abstraction of blood, either by leeches or the cupping-glass, to venæsection, where some loss of blood is absolutely required, and where this may form a safe substitute.

If the constitution be much impaired, it seldom hap-

pens that we are warranted even in the local abstraction of blood. A blister will, however, often be found useful under these circumstances ; but our best hope of combating the local affection will be founded on the effects of our treatment as directed to the system at large. If the patient has already taken much mercury, the propriety of re-administering this medicine at all will become a nice and difficult question. If administered at all, it should at least be given with the utmost caution, both as regards quantity, its effects upon the system, and with the greatest care to avoid cold, and all sources of local or constitutional irritation ; and it may be combined with tonics. The patient will generally be found to require a degree of support, as regards nourishment, which is quite inconsistent with the former views of the treatment of all inflammatory affections. The iodide of potassium, sarsaparilla, guaiacum, bark, quinine, &c., will be found useful if timely and judiciously administered. And the warm-bath will often prove beneficial. As some improvement is made, the utmost caution should be taken to guard against a relapse before the syphilitic poison or the mercury, if any have been used, is worn out of the system. The permanency and validity of the cure will often be further established by change of air, and especially by a short sojourn at the sea-side ; too bleak and cold a situation should be avoided. It must not be forgotten, that in this affection the iris is prone to contract and form

adhesions, to prevent which an early and repeated application of the belladonna should always be had recourse to by smearing it over the brow and under the eye-lids, which will prevent the frequent occurrence of a partial, and often even a complete closure of the pupil.

GONORRHŒAL OPHTHALMIA.

Gonorrhœal ophthalmia, excepting in its origin, differs but little in character from those severer forms of inflammation, commonly known as purulent ophthalmia; I shall therefore confine myself to a very short description of the subject, inasmuch as the treatment required differs, in no material degree, from that of the same form of purulent ophthalmia in the adult.

It is still a “vexata quæstio,” whether gonorrhœal ophthalmia owes its origin to the direct application of the gonorrhœal virus to the eye, or whether it may originate by metastasis of disease from the urethra to the eye, or as a secondary constitutional effect of that poison acting upon this organ. This question is one rather of curiosity than practical utility. I am inclined to think that the former is by far the most frequent cause of the disease, my own experience corresponds with that of Mr. Lawrence and others, who have never seen this disease arising from metastasis in the true sense of the word. With respect to its constitutional origin there seems to be more difficulty. That the disease may originate from absolute contact or

inoculation of the virus, is rendered certain by many well authenticated cases already recorded, nor would it, I think, be difficult for any person of considerable practical experience to call to mind several examples which have fallen under his own observation. The absence of evidence of this fact must not be taken as a proof that no such contact has occurred, when we consider how easily such may take place without the cognizance or recollection of the patient, who is often naturally careless, and made the more so by a total ignorance, that any care or precaution was necessary. Nor is the conclusion from such argument to be discarded from the fact, that the disease is so much more frequent in the male than the female, for it must readily suggest itself to any practitioner, how much more readily such a contact may occur in the one case than the other.

In favour of the occasional constitutional origin of the disease, it must be borne in mind, that it not unfrequently forms part of a chain of secondary symptoms, chiefly of a rheumatic character, which are apt to supervene upon gonorrhœa.

Gonorrhœal ophthalmia begins in the conjunctiva, and except perhaps in the more than ordinary intensity of the earlier stage, and the speedy pouring out of increased and vitiated secretions from this membrane, it offers no very distinctive diagnostic character from ordinary acute conjunctivitis. The incipient stage is, however, rarely wit-

nessed by the professional adviser, whose assistance is not called in perhaps till the puriform secretion has been thoroughly established. He will then probably find the case very severe; there will be great pain and intolerance of light, chemosis, great redness, copious purulent discharge, the cornea may have become involved, and there will be more or less reactive fever. The disease is most formidable, the risk lying in the extension of the disease to the other structures of the eye, permanent opacity of the cornea, and the still more formidable catastrophe of extensive ulceration and even sloughing of the eye.

It has been proposed by some continental oculists of eminence, to induce an artificially increased secretion from the urethra. Now, even supposing the disease did not arise in what is termed a metastasis, it is but hypothetical reasoning to argue that artificially induced purulent inflammation of the urethra would dislodge a specific form of this disease from the eye; but as the case really stands the practice is worse than useless, for it, to a certainty, induces mischief in one organ of great delicacy, and with almost as great certainty no benefit to the other.

The idea of curing gonorrhœa by specific remedies is now pretty generally abandoned; when, however, such notions did exist, the same remedies were, of course, recommended for the affection of the eye which arose out of this form of disease; in an active stage of this disease, however, a mercurial course is worse than useless, as tend-

ing to break down those constitutional powers of resistance to the disease of which we stand most in need.

The treatment of this affection in its active stage may be perfectly gathered from what has been said respecting the other acute inflammations ; but still more so from what will presently be said respecting purulent ophthalmia in the adult, from which affection the gonorrhœal does not greatly differ either in its general character or mode of treatment.

It must not, however, be supposed that this, although the most frequent, is the only form of ophthalmia which complicates gonorrhœa ; inflammation of the iris and sclerotica are not uncommon ; but I have more frequently witnessed these affections in connexion with other constitutional diseases originating in gonorrhœa, as rheumatic pains of the joints, bones, &c. The treatment does not differ materially from that which is to be adopted in similar forms of rheumatic ophthalmia. The constitutional origin, or connexion at least of the disease, should be borne in mind, and on the subsidence of the more acute symptoms every effort should be made, by carefully regulated diet, change of air, &c., to invigorate and brace the system.

PURULENT OPHTHALMIA.

Purulent ophthalmia has been usually considered under two forms, as it occurs to the infant, and to the adult.

There is no question that this is one of the severest and most destructive maladies with which the oculist has to contend; but it has ever appeared to me that too much stress has been laid upon it as a separate affection; too much attempt has been made to separate it from the other inflammatory affections of the eye.

Now I have ever been disposed to regard purulent ophthalmia as differing only in degree and result from other inflammatory affections—a difference sometimes due to the exciting cause of the affection, sometimes to the state of system of the sufferer: of the former, we have evidence in the gonorrhœal and Egyptian ophthalmia; of the latter, in the ophthalmia of newly-born infants. What I especially wish to aim at here is, that if a case of acute conjunctivitis could be examined at the earliest period of its commencement, it would be impossible to do more than guess at the result, whether it would or would not prove a case of purulent ophthalmia; such a guess, on the part of a skilful and experienced practitioner, would, no doubt, be tolerably correct, judging, as he would, of the cause of the affection, its site and degree, and the habit of the patient's system. The practical bearing of these views is not without its importance, for the younger practitioner is accustomed to look upon purulent ophthalmia as one of the most formidable affections of the eye, as characterized by the most intense degree of inflammatory action, and as requiring him to draw out all the heavy arti-

lery of the entire arsenal of antiphlogistic remedies to combat. Now it cannot be denied, but that when suppuration is established, inflammation may still be going on in the textures and parts adjoining the seat of suppuration, and that therefore some cases may demand antiphlogistic treatment, and that too of an active character; but such treatment is not directed to the parts already in a state of suppuration, but to those beyond them, affected by active inflammation, and liable like them to fall into suppuration, unless the violence of the inflammatory action be stopped. But for the parts already suppurating, and pouring out pus, becoming disorganized, what is the antiphlogistic treatment to do? The secretion requires to be checked, the vessels of the part want tone. Will bleeding, purging, starving, and calomel do this? What is the practice of the physician in internal abscess or suppuration, and of the surgeon in external? Does inflammation of the liver terminate in abscess, or bronchitis in copious purulent secretion, from the extensive mucous lining of the bronchial tubes? What does the physician do? Why, up to a certain point, his endeavours are to limit the extent of inflammatory action, and to save the affected organs by all means in his power. Suppuration and copious discharge having been established, an opposite line of treatment is required, and his object now is to support the system, and through it give increased tone and vigour to the tissues affected. Does phlegmonous

inflammation attack an external part? The surgeon, like the physician in the former case, by antiphlogistic means, by general and topical treatment, endeavours to subdue the inflammatory action, to limit its extent, if possible to prevent suppuration. This process, however, once fairly established, his treatment, whether general or local, is changed, to accommodate an entirely new order of things.

Now, what are the circumstances in which extensive suppuration most frequently occurs as the result of acute inflammation? Why, by far most frequently in proportion to the previously deranged condition of the patient's system. Just in the proportion, in fact, as they are least able to bear lowering treatment. Contrast the results of compound, or even simple fractures, as occurring to fine, healthy, sober, steady peasants, and to the poor, squalid, or the porter and gin-drinking workmen of this metropolis. The latter, no doubt, would present us the most formidable samples of disease; disease, too, of an inflammatory character — inflammation, suppuration, secondary abscesses, sloughing, gangrene. But would such cases bear, and in the present day are they treated by, powerful antiphlogistic means?

Reasoning, therefore, from analogy and personal experience in the treatment of diseases of the eye, have led me to the conclusion, that in proportion to the amount of purulent secretion should we be most wary,

most careful, in the adoption of powerful antiphlogistic measures. To return, however, to the more immediate consideration of the subject in question.

PURULENT OPHTHALMIA OF INFANTS

Is not always attended with marks of pain. It not unfrequently happens, that the attention of the nurse is first drawn to the affection by the fact of the infant's keeping the eyes constantly closed; it is not, perhaps, till some discharge is observed to flow from them, that professional assistance is sought for. At this time the lids will probably be found tumid, bulging considerably, and their edges tightly glued together; upon separating them a profuse, thick, puriform discharge flows out, the edges of the lid are found much reddened, and it is often difficult, nay, sometimes impossible, on our first visit, to obtain any view of the transparent structures of the eye.

Numbers of eyes are lost by this complaint. But why are they lost? Not from the violence of the disease, which bids defiance to our art, but from the carelessness of the nurse, and the still more culpable negligence or ignorance of the practitioner. I do not say this with a view to censurc my professional brethren as a mass, far from it; the great bulk of enlightened practitioners of the present day look out for the disease, and treat it properly when they discover it; but honest truth compels

me to plead for these poor little sufferers, and to say, that the medical attendant who neglects to pay sedulous attention to such cases is most culpable. Amongst the poorer classes of society, and these are the most frequent sufferers, I have witnessed but too many cases of irrecoverable blindness from this cause, which a more careful attention of the practitioner might have averted. It is not simply on account of the injuries inflicted upon the eye, as regards the transparency of its tissues, that this form of disease is to be dreaded. Extensive ulceration and sloughing of the cornea may entirely destroy the whole globe.

A disposition exists in the mind of many practitioners to attribute this disease invariably to the inoculation of the eye with gonorrhœal poison. Certain it is, that a vast majority of such cases occur in that class of society in which such a cause is most likely to be in operation ; but at the same time it must be difficult to prove that no such cases ever occur without the operation of this cause. May not other secretions besides the gonorrhœal puriform discharge afford sufficient cause for this disease ?

The treatment of purulent ophthalmia in the infant is sufficiently simple, and if the case be taken in time, is almost always attended with success. As much, however, depends upon the manner in which our directions are carried out by the nurse, no pains should be spared in

making these directions as clear as possible, and in insisting upon them with a degree of earnestness commensurate with the vast importance of the subject ; and what can be more important ? the poor helpless sufferer, unable to plead for itself, is at our mercy ; without great care and attention on our part it may never know the blessing of sight.

Owing to the agglutination of the edges of the lids, the copious purulent secretion is pent up within the eye, the mischief of which is very great ; first, in that considerable pressure is thus made upon the inflamed parts, which tends to keep up the irritation ; and secondly, in that matter thus situated is placed under similar circumstances to what it is in abscesses with fistulous openings, the opening probably being sufficient to admit the entrance of some air, which favours certain deleterious changes in the character of the pus, but not sufficient to allow the free evacuation of it. We have the same reasons, therefore, for contriving that the eye should empty itself freely, as the surgeon has for laying open certain forms of abscess, but happily our scheme is carried out without pain or inconvenience to the sufferer. Bathing with a little tepid water will soon soften the sticky matter which glues together the edges of the tarsi, and allow of our opening them pretty freely ; we have only then to insert a little simple ointment between their edges, or a little of the unguentum zinci,

and occasionally to repeat this application, for which we have to depend upon the nurse. We have now an opportunity of examining some, if not all, the transparent parts of the eye, and if we find a high degree of inflammatory action, with evidence of much pain to the sufferer, and some general febrile disturbance, the puriform matter being rather less abundant than is usual in such cases, it may be necessary to apply a leech to each eye or to the one most inflamed. I must confess, however, that I have rarely considered it necessary to adopt this practice, or had reason to regret not having employed it. With a small syringe a solution of alum should be carefully injected under the lids, so as to wash away the secretion; the alum-wash of two grains to the ounce is generally sufficient, but that of the sulphate of zinc is preferred by some practitioners, or the combination of zinc and alum. In many cases I have found the greatest advantage from the nitrate of silver when the secretion is a little diminished; my method of using it, is first to wash out the secretion, as before described, with the syringe, using plain rain water or the alum injection, and then, by means of a camel's hair-brush, introducing some solution of nitrate of silver, beginning with half a grain to the ounce. In addition to this local treatment, I direct a small piece of soft linen, dipped in the common Goulard water, to be constantly applied over the lid externally, and to be frequently renewed. It is desirable also

to procure free evacuations from the bowels, and a grain of calomel should be given for this purpose immediately ; this I frequently combine with a little prepared chalk if there appears much acidity of stomach, as evidenced by the child's vomiting the milk much curdled, or passing it in this form from the bowels ; this should be followed, in three or four hours, by a dose of castor oil or magnesia.

Careful inquiry should be made as to the supplies of nourishment of the little patient ; if the mother be strong, and affords an abundant supply of healthy milk, this only should be given ; but if the contrary be the case, if she be in a poor enfeebled state of health, and the secretion of milk is deficient in quantity or quality, a healthy wet-nurse should, if possible, be immediately procured ; and if this be impracticable, the best modes of artificial feeding should be adopted. It may be necessary, after a day or two, to repeat the purging, or at least to give an occasional dose of grey powder as an alternative and a little antacid saline mixture, either the nitrate of potass with the sesquicarbonate of soda, or a few drops of the liquor potassæ dissolved in water and sweetened by a little simple syrup. If the constitution of the infant seems very feeble, even at this tender age some mild form of tonic should be administered, of which the vinum ferri, or a little quinine, are by far the best. In these, as in

all cases of infants, it is desirable to administer medicines in the smallest convenient compass.

PURULENT OPHTHALMIA OF ADULTS.

Purulent ophthalmia in the adult chiefly differs from the same affection in infancy, as the adult age differs from the infantile as respects the effects produced by all causes inducing disease. Contrast, for instance, the effect of a blister upon an infant of a few days or weeks old, and upon an adult, and the comparison will fairly enough explain the difference between purulent ophthalmia of the infant and the adult. Applied to the former, even with the utmost caution of the practitioner as to the time during which it is kept on, &c., the part is liable to go into the process of sloughing, so feeble is the resistance to the destructive terminations of inflammation at this tender age. But let even a much larger blister be applied to the adult, and for a much longer period of time, four or five times as long, and what is the result? acute inflammation, with copious discharge of serum, it is true; and on removing the cuticle the most intense redness; sometimes even the escape of a small quantity of lymph or red blood; but rarely, very rarely, sloughing,—at least if some mild, cooling, and astringent application be made to the sore.

It has already been mentioned that purulent ophthal-

mia in the adult is often traceable to the immediate inoculation of the gonorrhœal virus, and a disposition exists with many persons to attribute the disease in all instances to some specific cause; it is difficult in all cases to assign the disease to more than the ordinary exciting and predisposing causes of all other common inflammatory affections either of the eye or other parts. It is certainly curious that a disease so formidable should have been omitted in almost all works upon the diseases of the eye, till after the period at which attention was drawn to it by the formidable mischief thereby sustained to the armies of the two most enlightened nations of Europe; England and France, during their wars in Egypt. The numbers of persons who suffered from this affection during this war, and the fearful results to which it gave rise, and that, too, in a public body of men, collected, as it were, in one mass, afford a ready explanation of the notice which was then drawn to this affection; but it seems impossible to imagine that purulent ophthalmia should not have been occasionally witnessed in all the countries of Europe, (independently of the gonorrhœal origin,) previous to this time, and still more impossible that all subsequent cases should be traceable to an Egyptian origin. The question, however, is rather one of curious interest than practical importance.*

* It has frequently occurred to the author to see this disease originating and spreading under circumstances similar to those which are observed respect-

Whatever its origin, the primary seat of purulent ophthalmia is pretty generally admitted to be in the outer tunics of the eye, the conjunctiva, or the parts immediately beneath, and connected with this membrane. Except in some experiments that have been instituted in the human eye, (experiments, in my opinion, as foolish as they are unwarranted,) few opportunities have been offered of witnessing the local changes which occur from the earliest commencement of this form of disease, because we are rarely called on until suppuration has been fairly established; and often, unfortunately, not until other structures of the eye are involved in the mischief. For it should be stated, that although the majority of inflammatory affections of the eye are happily slow to extend themselves to other structures than those primarily affected, it is the characteristic of such forms of ophthalmia as induce suppuration, to extend themselves

ing fevers, dysentery, and other diseases. In the Bombay charity schools, containing three or four hundred children, he has known this disease to break out suddenly, apparently from atmospheric influences, and rapidly affect at least half the school. The disease has then been observed to be accompanied by great dryness and eruptive affections of the skin. In a similar manner he has seen large portions of whole regiments disabled. Cleanliness of person, especially of the eyes, whitewashing the apartments, change of air when practicable, and strict attention to all measures, whether of diet or otherwise, which tend to invigorate the general health, he has ever found the best means of checking the spread of the affection, and even, in most cases, of mitigating its severity in those who were already suffering.

rapidly from the outer to the inner and deeper-seated structures of this organ.

From such spreading of inflammatory action may arise all those processes of mischief, whether in adhesions, depositions, destruction of tissues, &c., which occur as the effects of inflammation of these parts arising from other causes. A large list of the cases marked incurable, in the preceding abstract, as well as a considerable portion of other diseases to be spoken of as amongst the consequences of inflammation, owe their origin to purulent ophthalmia. In Egypt, where this form of disease is most prevalent, it is perfectly astonishing to witness the number of persons amongst the lower orders who have lost one eye, or been entirely deprived of sight.

Purulent ophthalmia, then, in its earliest stage, commences with the conjunctival covering of the sclerotic and lids, or with the parts immediately beneath them; at the commencement, and especially if the disease be not in its worst form, there is little to mark the distinction between it and ordinary conjunctivitis, saving perhaps that the affection is somewhat more violent, the pain and redness of the parts greater, and that the lids when everted afford a roughish appearance, as if innumerable millet seeds were placed immediately under the conjunctival membrane. The history of the case may also afford some clue; and the difference in the degree of reactive fever, greater in the former instance. Purulent ophthalmia

soon, however, evinees itself in the more or less copious flow of puriform matter; the affection assumes a more serious character, a great degree of chemosis is speedily set up, and unless the diseased action be checked, it soon spreads itself to the transparent cornea, and even to the parts beneath.

The army practitioners especially, have enjoyed the most frequent opportunities of witnessing the earliest stage of this affection, of which also it has fallen to my lot, in my public situation in India, to see frequent examples. Such, however, cannot often be the case amongst the practitioners of this country, where the disease is not only much less frequent, but generally less rapid in its course; and the consulting practitioner at least is rarely called in until the purulent character of the disease is fully established.

It is in this stage, perhaps before any, or when but the slightest degree of suppuration is established, that the best chance is afforded of cutting the disease short by the use of the lancet and other powerful antiphlogistic measures; and yet my own experience of the disorder, even in this early stage, has taught me that such measures are very rarely necessary, and seldom present any advantage over the use of emetics and purgatives, combined with the constant application of cold to the eyes, by means of a bit of soft linen frequently wetted with cold saturnine lotion; to this should be added great clean-

liness of the parts, for which purpose a little tepid water, or goulard lotion, should be carefully injected under the edges of the lid four or five times a day. In proportion as the purulent discharge is fully established, in the same proportion does active blood-letting become less useful; it may controul the incipient stage of inflammatory action already set up in other and deeper-seated structures; and this is the rationale of the success of this mode of treatment, as experienced by many eminent practitioners, for it exercises but little influence over the disease in its primary seat, where it has already passed into a stage but little amenable to such methods; and yet it might readily be supposed, that as the deeper-seated and more important disease owed its origin to the primary affection of the more external parts, that the treatment which most speedily restored them to a more healthy condition would make the most favourable impression upon the other and deeper-seated affection. And such in fact is the case. In this respect my own opinions, founded upon extensive practical observation, so nearly approach those of Dr. O'Halloran, that although differing in some measure from him in the treatment by which such results are obtained, I cannot resist quoting his opinions, as detailed in the work of Mr. Lawrence on the diseases of the eye, in order to show how far the experience of others agrees with my own, in refuting the necessity for violent antiphlogistic measures, and in estab-

blishing the position, that direct local treatment applied to the primary seat of disease is a most powerful measure for preventing, or even for relieving, when established, those further morbid conditions which originated therefrom.

"Dr. O'Halloran," says Mr. Lawrence, "enjoyed ample opportunities of observing the disease, as an army surgeon, for many years and in various climates. He had become dissatisfied with the antiphlogistic treatment, from having found it frequently either insufficient or injurious, and was hence led to use astringents, not only in the early stage of the disease, but when the purulent discharge and chemosis were fully established. He employed the sulphate of copper in substance, rubbing with it the inner surface of the eye-lids, after everting them, or he dropped into the eye the ten-grain solution of the nitrate of silver; and generally used one or the other once a day. He gave purgatives and applied fomentations. If the symptoms indicated that the internal parts of the organ were affected he directed the application of leeches. After mentioning a case treated successfully with the sulphate of copper and the caustic solution, he adds, "The foregoing case, with some hundreds on record, of the different varieties, show with what efficacy and safety blue stone may be applied to the eyes when under disease; its effects in removing the affection and allaying the irritation are remarkable. I can safely say, that abstraction of blood will be rarely necessary in this disease, if the plan recom-

mended be strictly attended to ; and I, moreover, am of opinion, that if any inquiry be instituted amongst the army surgeons, it will be found that those who used the greatest depletion were the least successful practitioners ; and that sloughing, ulcers, &c. more frequently succeeded the evacuating plan, than when the patient was partly left to nature."

How different the advice of Mr. Lawrence himself, who says, "Blood should be taken from the arm, and in large quantity, so as either to influence the circulation decidedly, or to produce syncope." Again, after having quoted the authority of Dr. Vetch, in a tone that would appear to sanction his views of blood-letting to the extent of fifty or sixty ounces at a time, when the desired effects upon the system or the disease are not induced by a less quantity, he concludes his own advice on this subject by saying, "After venesection, cupping from the temple and leeching may be employed. In a severe case, after bleeding the patient *largely* from the arm, apply twenty or thirty leeches round the eye, and repeat them quickly."

How far the success of Mr. Lawrence's practice warrants the adoption of such powerful depletory means he does not assure us, but, from the expressions used in speaking of the prognosis in this affection, as being "uncertain," from its "formidable" and "unmanageable" nature, we may presume, fairly enough, that he does not find it more tractable when attacked with all this deter-

mination to root it out, than do others who use milder means of cure. Be that success, however, what it may, it should be remembered that it is in the hands of an accomplished anatomist and physiologist, a man of great acumen and high order of talent, a man too of large hospital and private experience. Mr. Lawrence's judgment and experience must give any plan of treatment he adopts, no small advantage in his hands ; but one almost trembles to see such weapons put, by his advice, into those of less talented and skilful practitioners. From thirty to sixty ounces of blood taken from the arm, followed by the cupping-glass to the temples, or from thirty to sixty leeches, may cure an ophthalmia no doubt ; but, with Dr. O'Halloran, it may be said, that it may render the matter worse, and I might also add, it may ruin, nay, has ruined, many a constitution.

When, however, the constitution is plethoric and robust, and the disease is rather characterised by the velocity and intensity with which it attacks the cornea, and above all, the iris and deeper-seated structures of the eye, than by the copiousness of the purulent secretion, blood-letting in the early stage may be found salutary, and I quite agree with Mr. Lawrence, that one copious venesection is more advantageous as regards its effects on the disease, and I might add, less injurious as respects its influence on the constitution, than several smaller and inefficient evacuations of blood. The more thoroughly established is

the suppurative process, therefore, the less is the necessity for general blood-letting, although with the motives I have before described, and as also stated by Dr. O'Halloran, a few leeches or cupping may be occasionally, though but rarely, required. It is singular, that with the general advice he gives, Mr. Lawrence should open his account of the treatment of the disease with this expression—"Antiphlogistic measures, although capable of removing the inflammatory symptoms, which are present in some instances, cannot remedy the affection of the palpebral conjunctiva, which is the source of these symptoms."

Besides the general treatment already laid down, I am in the habit of injecting a solution of alum, sulphate of zinc, or the goulard lotion underneath the lids, once or twice daily, as in the purulent ophthalmia of infants; of the use of the blue-stone in the earlier stages I have had no experience, though I can, even under these circumstances, speak favourably of the effects of the solution of nitrate of silver, though I rarely commence its use even with adults in a stronger solution than about four or five grains to the ounce. In the course of a few days the discharge will be found to have considerably abated, and I then frequently use the solid blue-stone, especially if the lids be very granular, otherwise I continue the use of the lotion or solution of caustic. During the early stages I keep a picce of rag dipped in cold saturnine lotion, con-

stantly over the eye, unless, as rarely happens, the cold aggravates the pain, in which case I change it for warm or tepid fomentations. So soon as I see an improvement commencing, I take the earliest opportunity of administering tonics, and especially the quinine, of recommending out-door exercise, and of affording the patient an improved diet. This general plan of treatment I have ever found the most successful, nor is it on a few isolated cases that my experience has been founded; amongst the troops in India, and in the large government schools. I have treated the disease wholesale, if I may be allowed the term, and that with the greatest success, having rarely witnessed any serious permanent injury to the organ, when these cases have come under my care at an early period.

In purulent ophthalmia, the mercurial treatment carried to salivation is decidedly objectionable, as increasing the tendency to sloughing and ulceration, but a dose of calomel in the first instance, followed by a brisk purgative, and the occasional repetition of this measure or use of alteratives and milder aperients, will generally be found useful.

Some apology, perhaps, is required for these lengthened comments upon the powerful antiphlogistic treatment of purulent ophthalmia; but this treatment has been recommended on the high authority of many of our greatest surgeons,—an authority highly and justly estimated every-

where, but nowhere more so than amongst their own countrymen; such strong opinions on one subject are too apt to instil a more general bias, and however much we are all indebted to the exertions of our metropolitan hospital surgeons, in other respects; I am bound to declare it as my unhesitating opinion, that in most cases of inflammatory affections of the eye, a bias has been given in favour of depletory treatment, to a degree that has in many instances proved most mischievous.

EFFUSION OF PUS INTO THE ANTERIOR CHAMBER.

In purulent ophthalmia, the suppuration occurring from the surface of the outer tunics there is a free outlet for the pus, which therefore becomes no further a source of mischief, excepting in the manner above described in the case of the purulent ophthalmia of infants. A more serious inconvenience, however, occurs in the deposition of pus into the chambers of the eye from inflammation of the deeper-seated structures. In the case of suppuration of the whole globe, it need hardly be remarked, that the disease is beyond all hope as regards cure, and the only aim of the practitioner must be to adopt such measures as are most likely to relieve the suffering of the patient, and to prevent the extension of disease beyond the limits of the socket: this case is, however, in this country at least, happily very rare;—yet it not

unfrequently occurs that in inflammation of the iris, the posterior surface of the cornea and other parts, a considerable deposition of pus takes place into the anterior chamber of the eye; in that position the pus is very visible, and we may easily watch its increase or decrease. It need hardly be said that the continued persistence of an opaque deposit, like pus in this position, would be most detrimental, if not destructive of vision; but fortunately, on the subsidence of the inflammatory affection, it usually happens that the pus so effused is readily re-absorbed; it is most curious, as well as interesting, to watch the rapidity with which this process is conducted, on the subsidence of the inflammatory affection and the return of healthier conditions both of the general health and the parts affected. It is not, however, simply as an obstacle to the admission of light, that this purulent deposition is injurious, for in the earlier stages of inflammation, the mere obstruction to the different rays of light would rather be advantageous than otherwise; but the fact is, that pus so shut up, itself becomes a further source of irritation to the surrounding parts, and retards their restoration to health. Take, for example, a common whitlow, or any external abscess; the suppurative process once fairly established, the cure is greatly accelerated by opening the abscess.

Moreover, the globe of the eye is in health just so distended by its humours and internal structures as is

perfectly consistent with the healthy and the proper actions of all its various parts; let but a little more distension be made by congestion of its vessels, or deposition of pus and the other products of inflammation, and much inconvenience must of course result. This inconvenience is readily alleviated in the case of the deposition of pus into the anterior chamber, by treating it as we should do an abscess, that is, by making an external opening for the evacuation of the matter. The operation is one of some delicacy. I have been in the habit of performing it with the cataract knife, as being somewhat stronger and firmer than a common lancet, although the latter instrument will answer the purpose sufficiently well. The incision should be made in the same way as in the operation for cataract, only much smaller, and through the lowest and most dependent portion of the cornea, taking care that the incision should be sufficiently low as to avoid the field of vision, as it will occasionally happen that the operation leaves an opaque cicatrix which would prove extremely inconvenient if within the range of the expanded pupil. This operation I have performed over and over again with the happiest results, and even at a period when the cornea had already begun to distend, soften, and even slough under the combined effects of the inflammatory action and the distension made upon it by the pressure from within. The operation will, however, prove most useful if early had recourse

to, and will often be the means of averting such catastrophe. It will sometimes be necessary to repeat this puncture at intervals.

One or two interesting cases may be cited in illustration of the safety and efficacy of this practice.

Many years ago I was consulted by Captain M., commanding a China ship, (the Pascoa,) who was labouring under iritis of the most formidable character, attended by copious purulent deposition into the anterior chamber of the eye, which caused considerable aggravation both of the inflammatory affection and of his sufferings. A puncture was made with the cataract knife at the lower margin of the cornea, with very great relief; and during the course of the case I had to repeat the operation seven times, at intervals of some days. On several occasions, as not unfrequently happens, the pus was too thick and glutinous to escape, and I was obliged to introduce a fine probe for the purpose of assisting its removal. The ease ultimately did quite well, leaving the sight perfectly unimpaired, with the exception of a slight cicatrix from the effects of these wounds, which, from its position, was neither detrimental to vision nor any great disfigurement to his person. In the ease of a favourite servant of the Earl of Clare, his lordship's butler, whom I attended at Bombay, when labouring under a similar affection, I had occasion twice to puncture the cornea, with equally happy results; and in this instance no

visible trace of cicatrix remained; nor was his sight in any degree impaired.

EGYPTIAN OPHTHALMIA.

During my travels through Egypt in the years 1835 and 1836, I paid considerable attention, (having visited this country principally with that view,) to the peculiar form of purulent ophthalmia so prevalent in that country, and which has been so disastrous to the troops of our own and the French nation. Excepting in its origin, the Egyptian form of purulent ophthalmia does not appear to me to differ in any material point from the same affection, as I have witnessed it in India, or those parts of Europe which I have visited. The number of persons one meets in Egypt who are totally and irrecoverably blind is indeed most frightful; but from my own observations I am disposed to think that more eyes are lost from those chronic forms of disease engrafted upon primary acute purulent ophthalmia, than during the active state of this complaint itself.

Nothing is more common than to witness in the bazaars and other frequented places in Egypt, the most disgusting and revolting sight of persons going about with great streaks of puriform secretion running down their cheeks, and matted to their beards with dust and dirt, the accumulation of many days, unwashed. Naturally indolent, in common with the inhabitants of most

warm countries, they neglect the earlier stages of disease ; and amongst the male part of the population at least, the incentive to obtain relief is abated by their desire to escape military service, at the expense of serious mischief to, or even total loss of an eye ; and indeed I understood that it was not uncommon for men voluntarily to inflict blindness of one eye, or other serious mischief upon themselves, with the view of escaping their liability to serve in the army. Another apology for the dirt and especial filthiness of the Egyptians may be found in the general scarcity and want of water.

In the hands of an intelligent practitioner, calomel, black draught, and a plentiful supply of water, would alone materially diminish the frequency and virulence of this baneful disorder.

The habit of the Egyptians is to crowd themselves much together ; their mode of living is very poor ; they spend a considerable portion of time in the bazaars and other public places, where the profusion of flies, at all times sufficiently great, is aggravated by the exposure of dates, raisins, figs, and other sweets, by which they are attracted ; it is to these flies, carrying the purulent secretion from one eye to the other, that I believe the extension of the disease is frequently due ; and I would strongly urge all persons in their travels through Egypt, to be provided with veils for the purpose of keeping off these insects ; gauze, or dark-coloured spectacles, may

protect the eyes against the glare of the sun, or partially even against dust, but they do not prevent flies from settling on the lids. My belief is that plague itself is thus frequently propagated.*

INFLAMMATION OF THE WHOLE BALL OF THE EYE.

It has been already stated that many inflammatory affections of the eye are strongly disposed to remain in the one tissue primarily affected, or at least to be extended no further than to the immediately contiguous parts ; this beneficent law in pathology, it was also seen, experiences some important deviations in the instance of purulent ophthalmia, from whatever cause arising ; it now remains to be stated that in a few instances inflammation sets in with, or simultaneously affects several, not to say all, the structures of the eye.

This form of disease, happily by no means of very frequent occurrence, it is scarcely necessary to remark, is one of the most formidable of the inflammatory affections of the eye. All the structures affected present the peculiar appearances due to inflammatory action of each part, the conjunctiva and sclerotic each exhibit various

* In an interview with Mahomed Ali Pacha, his highness was pleased to express a desire that I would remain in his country ; although I could not comply with this polite proposal, I ventured to suggest the propriety and hope that he would order measures to be taken for the establishment of an eye infirmary in Egypt, where it is so obviously wanted.

degrees of vascular congestion, the cornea becomes turbid, and sometimes red and vascular, the iris contracts with irregularity, and the imperfection of sight is far greater than is proportioned to the degree of turbidness of the cornea. Great pain, extending to the temples, accompanied with a sense of tenseness of the eye-ball is complained of; and if the disease be in an acute form there is considerable reactive fever.

This disease is generally described as occurring to persons of robust health, as being of an acute character, and as requiring the most powerful antiphlogistic measures for its cure ; such is, however, by no means usually the case. I have much more frequently seen the disease in persons of a broken-down constitution, and where the general health required, and the local disease was benefited by a tonic and invigorating line of treatment even from a very early stage. This form of disease is very liable to affect both eyes simultaneously, or in rapid succession. I have observed it in persons a little past the middle period of life, who have been much addicted to drinking, spirit drinking especially, and in younger persons not unfrequently in connexion with a generally impoverished and cachectic system, induced by long continued venereal affections.

The mode of treatment must be based on a careful consideration of the nature of the disease, the powers of the patient's constitution, and the leading character of

each particular case, as regards the parts most prominently affected, and the degree of intensity of the disease in each particular structure.

VARIOLOUS OPHTHALMIA.

Various forms of ophthalmia occur in the course of some other diseases of a more general character, forming part of these affections, the eye being one of the structures liable to suffer from such general influences. Amongst these general diseases, small-pox may be mentioned as the affection in which the most serious injuries are liable to be inflicted on the eye ; the small-pox pustule sometimes forms on the conjunctiva ; and if that portion of it which covers the cornea be the seat of disease, the results may be most disastrous ; besides the fearful degree of prostration and helplessness which attends this disease in its worst forms, and which incapacitates the sufferer from perceiving, or if he perceives, from drawing the attention of the attendant to his eye, the great tumefaction of the lids and face, to say nothing of the intolerance of light, generally causes the lids to remain closed ; and as the minor evil is swallowed up in the greater, the process of disease of the eye is apt to go on unheeded and unchecked, aggravated by the pressure of the lids, and the inclosure by them of the vitiated secretions of the parts, until the pustule becomes a large and extending ulcer ; the ulcerative process proceeds rapidly, favoured by the ex-

hausted condition of the whole system; and thus has severe small-pox not unfrequently just missed the destruction of life itself, to cost the patient the loss of one or both eyes. How great a blessing has vaccination conferred upon humanity in this respect, having mitigated the risk of blindness as well as of death in those cases of small-pox which occasionally happen in spite of its protective influence!

In a severe case of small-pox, therefore, I need hardly caution the practitioner to be most careful in occasionally watching the state of the eyes. The pustule here, which is of a specific character, is the primary cause of such subsequent diseases, as may occur—the case will not require any specific treatment, for with the subsidence of the eruption in other parts will that on the eye also subside; it is only necessary to guard against disastrous results. Cleanliness, anointing the edge of the lids, as in the purulent ophthalmia of infants, with a little simple or mildly astringent ointment and the injection under the lids of tepid water, or at most a mild astringent lotion of sulphate of alum, zinc, or a weak solution of nitrate of silver, will generally be sufficient to save the eye. Any pustules which are situated immediately about the lids, may be carefully punctured, for by thus letting out their contents, pressure will be taken off the eye-ball itself.

OPHTHALMIA FROM MEASLES, SCARLATINA, ERYSIPELAS, &c.

Measles, searlet fever, and erysipelas, are all liable to implicate the eye. In these eases it is generally the conjunctival membrane only that is affected, and besides the treatment adopted for the diseases themselves, little more than mere cleanliness is required as respects the affection of the eye: in more serious eases the treatment must be adopted which has been already described, according to the seat and degree of the inflammation.

CHAPTER IV.

AFFECTIONS THE RESULT OF INFLAMMATION—ULCERS—NEBULA—LEUCOMA—STAPHYLOMA—PTERYGIUM—CLOSED PUPIL—OPERATION FOR ARTIFICIAL PUPIL—AFFECTIONS OF THE HUMOURS—AFFECTIONS OF AQUEOUS HUMOUR—HYDROPHTHALMIA—AFFECTIONS OF VITREOUS HUMOUR—GLAUCOMA—TREMULOUS IRIS—TREATMENT OF GLAUCOMA.

THE more or less permanent organic alterations of the various parts of the eye which may result from previous inflammation, are even more numerous than the contents of this chapter would indicate. It must not, however, be supposed that the forms of disease, upon the consideration of which we are about to enter, are distinct. Several of these forms may co-exist at the same period of time, and any one or more of them may be so intimately mixed up with the cause of inflammatory disease out of which they originated, as to give them a claim to be considered but a part of the disease as a whole; in such case the practitioner will have to weigh with caution the relative importance of the still persisting inflammatory affection, the cause: with the already established secondary disease, the effect; according to his judgment

will he make the one or the other the chief object of his treatment. If he be imbued with very strong opinions in favour of the antiphlogistic plan of treatment, he will often find such adjustment extremely difficult. This has already been seen to be the case in purulent ophthalmia, for here the suppurative process may be said to be rather the result of inflammation, than a part of inflammation itself; and for this reason it is, that although I have not placed that disease in the present chapter I have put it amongst the last of the other forms of ophthalmia, as standing in the nearest relation to the subjects to be here considered. The physician and surgeon who would withhold the lancet on the free establishment of suppuration from other parts, forget this rule in ophthalmic practice. The difficulty to which I have alluded is greatly lessened by looking at ophthalmic practice as but a part of medicine and surgery ; and here again, another consideration presents itself. Not a few of the affections, the result of inflammation, become again the sources of irritation, and keep up a certain degree of inflammatory action ; thus of the purulent secretion and granular state of the lids in purulent ophthalmia ; we have the testimony of Dr. O'Halloran and many others, to the effect, that measures which check these morbid conditions lessen the intensity of disease in other and deeper seated structures. Ulcer of the cornea may keep up inflammatory action of the surrounding parts, just in the same way as an ulcer of the

leg, in which case the treatment best suited for the ulcer is best adapted for the inflammatory action of the surrounding parts.

Three reasons have mainly induced me to take a cursory notice of the present subjects under a separate chapter ;— First, that although they might have been treated of under the head of the several forms of inflammatory affection to which each is particularly due, this would have occupied considerably more time and space, and have thus rendered the description of those affections more tedious ;— secondly, because all medical men, and the oculist in particular, are constantly liable to be consulted for these affections, the result of an inflammatory action, which has either long subsided, or is at the time of his seeing the patient on the wane ; and thirdly, because such affections are more frequently proportioned, in their importance and extent, to certain conditions of the whole system, than to the intensity of the prior disease. I mean the intensity as measured by the necessity for antiphlogistic treatment.

This last consideration appears to me, at least, to be a subject of no light importance. A man imbued with strong feelings of the necessity of combating all inflammatory diseases by copious general and local blood-letting, observes such and such results, in certain cases of ophthalmia. Never questioning the propriety of his own treatment, founded on the high authority of his equals or superiors, and borne out by his own ample experience, he

is apt to attribute such results to his leniency in that treatment, to the severity of which they may be in reality due, and is thus something worse than confirmed in his error. Do not let it be supposed that I am condemning the medical profession ; the fault lies in no body of professional men, but in human nature ; the physician and the surgeon are but like other men when they attribute all the good cases to their especial skill, and all the bad ones to circumstances, not beyond their skill, but their controul. Hence it is that, in medicine, as in all other things, real improvements are of slow growth, and old errors of slow decay ; innovations, it is true, may spring up apace, " backed by a little brief authority," but innovations are not always improvements. The medieval philosopher is the student of nature ; he must take facts and not authorities, for his guide.

ULCERS.

It would be quite impossible, in a work of this kind, to enter into any lengthened disscussion of the general subject of ulceration, or indeed to give a very full description of all the various forms of ulcer to which the eye in particular is liable. Such a desription might not, indeed, be without its interest ; but, fortunately, all that is materially necessary to be said, in a practical point of view, may be reduced within a small compass.

The greatly increased fulness of the minute capillary

vessels in inflammation, and the various products effused from these vessels, cause pressure; where this pressure is greatest, the vitality of the part is impaired, often, perhaps, destroyed. If such destruction of parts be considerable and rapid, and the part so destroyed is separated from the rest of the living structures in mass, in portions manifest to the eye, the term sloughing is given to the process, and the part separated is called a slough, the surface left is called an ulcer. If the processes of repair, presently to be mentioned, go on favourably, the ulcer heals; but if, on the contrary, fresh layers of structure are thus visibly separated, the ulcer is called a sloughing ulcer. But this process of separation of parts by great visible masses does not always occur; minuter portions are separated by processes invisible to the eye; they are in a measure dissipated in fluid secretion from the part, and partly removed by the process of absorption, again to enter the current of the circulation from which they sprung. Again, if the process of restoration is not set up, the ulcer spreads and increases, and is said to be a phagedænic ulcer.

Now, the process of cure is this,—the capillary vessels, on the surface of the sore, give out a solid secretion, ordinary lymph probably in the first instance, but which speedily assumes the appearance of little fleshy tubercles known by the name of granulations; these granulations, not materially different in their appearance, from whatever

surface they may grow, are very rapidly converted into a texture homogeneous with that whose place they are intended to supply, and thus the breach is mended by so masterly a hand as to leave no trace of the repairs. If these granulations spring up too slowly, the ulcer remains nearly stationary, and is usually called sluggish or indolent; if, on the contrary, they spring up with great luxuriance and rapidity, being at the same time (as they usually are) larger than natural, the ulcer is said to assume a fungous character, and the excrescence thus occasioned is vulgarly known by the title of "proud flesh."

Such, then, are four of the principal features of unhealthy or morbid ulceration, which it is chiefly necessary for the oculist, in common with the physician and surgeon, to bear in mind; for minute as the organ, with which he has to deal, is, as compared with the great internal viscera, or the external limbs; and small, therefore, as is the scale on which such processes are to be studied and observed, yet the eye affords as distinct examples of all these forms of ulceration as do the larger surfaces of the body.

Ulceration therefore, it may readily be conceived, may not only differ in degree, but owe its very existence as much to particular states of system as to relative degrees of intensity of inflammation.

This is seen in the system of parts, if the phrase may

be allowed, inasmuch as some parts are more liable to ulcerate than others, the skin, mucous membranes, and fibro-cartilaginous tissues, for example; than the fibrous, as the pleura, peritoneum, bursal and synovial membranes. In the eye, the conjunctival membrane, nearly approaching the skin, and mucous membranes in anatomical character and function, is by far the most liable to ulceration; next to it the cornea, and last of all the sclerotic, which makes a much nearer approach to the dura mater, and other fibrous membranes. It is seen in the system of the individual, as exemplified before of the effects of blisters, as applied to the infant or the adult; in the fact, that sloughing ulcers rarely (excepting under peculiar circumstances which admit of ready explanation) and phagedænic ulcers still more rarely occur to persons in full vigour of constitution; although these, be it remarked, are most liable to the highest degrees of inflammatory action; and also, in the fact that ulceration from pressure, as from constantly lying on the same part, rarely occurs till the powers of the system at large are much impaired and exhausted. Specific poisons moreover induce tendencies to ulceration quite irrespective of the degree of inflammatory action to which they give rise. To cite no other instance, the poison of lues creates but little intense inflammatory action, but always ulceration, and that, too, of a formidable character; whilst the gonorrhœal poison excites intense inflammation, but very rarely

uleeration, properly so called. Nor let it be said that the difference is due solely to the difference of the structure affected. The orifice of the urethra is not unfrequently the seat of chancre, and its mucous membrane the victim of the ulcerative process.

Enough, then, has been said to show that unless under particular circumstances, which constitute the exception, and not the rule, we are not to bleed any more in affections of the eye than in those of other structures, to prevent ulceration; and least of all are we to bleed to cure it, since three out of the four forms of ulceration above mentioned are attended with deficient vigour in those processes, whether general or local, by which a cure is to be effected; and the fourth form, although exhibiting some luxuriance of local action, generally also shows evidence of inferior quality in the materials which are laid down.

Such morbid characters of ulceration, when occurring in the eye, afford us ocular demonstration of their several peculiarities, whilst here, as elsewhere, they are commonly accompanied by symptoms, whether general or local, which would appear to hint to the patient that all is not right. We must, however, now say a word or two on healthy ulceration; or perhaps it may suit the taste of some of my readers better to say healthy ulcers. If the ulcer presents none of the appearances above described, but becomes gradually smaller, filling up at the

same time from the bottom, and such morbid local or general symptoms as existed gradually diminish, we may be satisfied that the healing process is going on favourably.*

My own conviction is that ulceration is properly, so to speak, a restorative process. The same creative power which established the laws of healing by the first intention established those of ulceration, and with a design no less beneficent and useful. The same, perhaps, may be said, within certain limits, of all so-called morbid processes ; but I particularly object to the term morbid process being applied to the ulcerative, excepting under the circumstances above enumerated, since I regard it, in its healthy character, as the curative process of certain conditions that would not have been otherwise removed. I believe ulceration, so far as regards the removal of parts, to consist of the removal of such portions only as have sustained a degree of mischief which unfits them for further uses in their present position ; and that the cure of the part depends upon that removal and the reproduction of better, and new materials in their stead. The slow, and to the eye invisible process of ulceration, then, is no more than the more rapid and visible one of sloughing or mortification, in which large masses are separated from the system—masses in the one case, granules in the other, of useless matter. Why not, then, it may be said, allow Nature her free course in the processes of ulceration and sloughing ? And so we do. Nay, even in the case of sloughing assist her, in the removal of those portions already destroyed. But, as in the case of sloughing, no treatment is of any use to the parts already mortified and dead, but to the living tissues in their immediate vicinity ; so in phagedænic ulceration, the treatment, whether general or local, is directed with the view of ameliorating the condition of such contiguous parts as, being already damaged by the process of disease, are themselves liable to fall into that utterly useless condition, as shall make their removal by natural processes absolutely necessary.

That we possess such powers must be evident to every sensible and observant practitioner ; and that we are bound to use them to the best of our ability, can be more evident to none than to the oculist. The organ whose repair it

It happens, however, in some parts, that the structure destroyed is never restored by an exactly homogeneous substance. This occurs of the skin—and in this case the permanent cure is formed by the nearest approximation of parts, the interstices being filled up by a new material differing in some degree from that, whose place it supplies—hence wounds of the skin leave what are called cicatrices, the size and disfigurement of which depends upon the amount of true skin destroyed, and the skill of the surgeon in approximating the parts. It often happens that in ulcers, burns, &c., much less true skin is destroyed than might have been at first supposed, and that the cicatrix is less than could have been expected. In wounds or ulceration of the eye, the cornea seems frequently to be restored in its usually beautifully transparent form; not always so, however, when the wound is large, whilst the conjunctiva, like the true skin, is seldom if ever restored in its perfect character; hence ulcers of the eye are liable to leave cicatrices, which may not only prove a disfigurement to the person, but an actual hindrance to sight, if occurring within the field of vision. As in the case of the skin, it often happens that ulcers of a considerable size leave much less mark than one would have an-

is his business to superintend is so small, that no structure can be spared. The difference of a few lines only in the extension of an ulcer, may secure his patient the blessing of sight, or close his eyes in life-long darkness.

ticipated ; probably from the fact that less of the conjunctiva was in reality destroyed than was supposed ; whilst a mere incision of the conjunctiva and cornea, as in the operation of extraction of cataract, or in puncturing it to let out matter from the anterior chamber, may in some cases leave a slight, in others, no scar at all. This perhaps, independently of other circumstances connected with the process of healing, depends upon the more or less exact approximation of the divided parts, a circumstance over which, in the eye, we have little or no controul.

The conjunctiva, it has been stated, is the part most liable to fall into ulceration, whether as it covers the lids, the sclerotic, or the cornea. It is in the situation over the cornea that ulceration is most serious, and the more so as it occupies parts nearest the centre. Purulent ophthalmia, and the strumous forms of pustular ophthalmia, are those most frequently attended by ulceration. From its very close and intimate relation with the cornea, with which it becomes almost identified, it is, that ulceration of the conjunctiva when occurring in this situation almost necessarily implicates the subjacent cornea itself. The forms of ulceration connected with purulent ophthalmia, are apt to be of the most formidable and destructive character, often assuming the sloughing or phagedænic type. It may be pretty generally stated, that so soon as the ulcerative stage of ophthalmia is established, the general health should be supported by tonics,

fresh air, and improved diet, and in no eases more so than in this. The most active steps should now be taken to restore the parts primarily affected to a more healthy condition, which may be effected by the application of the caustic, or its solution, to the ulcer—or when the ulceration is accompanied by a granular state of the lids, as is not unfrequently the case, by the use of blue-stone. Some local stimulants may be generally used with advantage, as dropping the vinum opii into the eye; but sometimes the immediate stimulating effect of the blue-stone or caustic will be sufficient to impart fresh vigour to the vessels of the ulcer, whilst they act as powerful sedatives to the other parts of the eye. In these eases the liq. plumbi diaeetatis dropped into the eye has the best effect, or a solution of nitrate of silver in vinum opii, one or two grains to the ounce. The greatest importance, however, attaches to the measures of general treatment. In this, as in all other forms of ulceration, the alvine secretions should be carefully attended to; the judicious administration of an alterative will often induce beneficial effects beyond all expectation or calculation. Of the tonics which may be used in this state of disease, quinine is, in my experience, by far the most valuable, both from the superiority of its tonic powers and the rapidity of its action. If much pain be present, which is not unfrequently the case, I have found that not only this is re-

lieved, but the destructive process often retarded by the administration of an opiate.*

The form of ulcer originating from pustules is for the most part less rapidly destructive in its progress, but more insidious perhaps, and not unfrequently leaves a cicatrix. The ulcer in this case is not unapt to assume a sluggish character, in this instance the *vinum opii* is the best local application. The state of constitution in which this disease originates is generally benefited by steel, which may be given alone or combined with the quinine or bitter vegetable infusions, according to the circumstances of each case. In these cases numbers of large vessels are seen shooting across from the sclerotic portion of the conjunctiva to the ulcer. Some practitioners are in the habit of dividing these vessels before they pass over the cornea : this practice cannot be too strongly reprobated ; it is worse than useless, for on these vessels are we mainly dependent for the establishment of that process of granulation by which the cure is to be effected.

Ulceration may occur at the posterior portion of the cornea when much pus is effused into the anterior chamber. No local application can, of course, be made under these circumstances, which, however, only indicate the propriety of the early operation of puncture, as before re-

* The effects of such treatment in ulcers of the legs, burns, &c. must be familiar to all practitioners.

commended. The wound made by puncturing is small, that made by the natural process of ulceration may be so large as to prove destructive to the eye.

Fungous granulations are chiefly seen of the lids in purulent and other ophthalmia; the use of blue-stone in repressing these has been already advocated, but this must be also combined with judicious treatment directed to the general health.

A peculiar form of ulceration, which I believe to be seated in the cornea alone, sometimes occurs, chiefly in persons of broken-down health, preceded often by the most trivial signs of inflammation. The ulcers are very minute, and often very numerous, so that when the eye is examined by a side light, it presents a number of minute indentations, resembling somewhat in appearance, though smaller, the numerous indentations on the end of a thimble. This process of ulceration is very insidious, and liable to be very disastrous to the eye, by the coalescing of the ulcers and the deposition of lymph in their interstices, which may entirely obstruct the transmission of light. The treatment differs in no material degree from that of the ulceration from ordinary pustules, unless any particular co-existing state of disease should require especial attention.

OPACITIES OF THE CORNEA—LEUCOMA.

Under various circumstances, but more particularly as

the result of inflammation, the transparent cornea is liable to become opaque. Two forms of opacity especially deserve attention, leucoma and nebula—both are dependent upon the effusion of dense opaque substances in consequence of inflammation. In leucoma, however, where no ulceration externally has existed, the situation of this deposit is between the layers of the cornea; the extent or degree of this deposit may depend upon the character as well as the degree of the previous inflammation, the management of this inflammation, and the habit of body of the patient. These points deserve careful consideration. During the existence of inflammation itself, opacities are already to be observed, and these will often be found to diminish, in proportion as the inflammatory action yields to such measures as are adopted for its cure. Often, indeed, on the cessation of this process, the opacities thereby produced will be observed rapidly to disappear; but they sometimes continue more permanent, and are found to exist long after inflammatory action has subsided.

No local applications can be made to the exact seat of disease, but there is no doubt that many applications made to the neighbouring parts are of considerable service. I allude to the use of the various solutions which are dropped into the eye. The rationale of their mode of action is probably, that they induce certain sympathetic actions of the deeper seated vessels, correspondent with their effect on the more superficial ones; considering the inti-

mate relation of the blood-vessels with the nerves, even the minutest capillary vessels being probably, in all cases, accompanied by minute nervous filaments, we cannot be surprised at such effects; and we, moreover, have examples of this mode of action of remedies, in many of the external applications, used both in medicine and surgery. The vinum opii, liquor plumbi, and solutions of nitrate of silver are, under various circumstances, the external remedies most frequently used for this purpose; it must, however, be confessed that their successful application is attended with less precision and certainty than in the case of nebula. Attention to the general health, the removal of all sources of irritation, and giving tone and activity to the parts affected, through the medium of the whole system, as by tonics, exercise, proper diet, &c., are amongst the most influential means of remedying this affection.

I cannot myself speak much in favour of the use of blisters, issues, setons, leeches and cupping, as recommended by some practitioners.

OPACITIES OF THE CORNEA—NEBULA.

Nebula differs only from leueoma in the position of the opaque deposit, which here takes place, not between the layers of the cornea as in leueoma, but from the conjunctiva or outer membrane which invests it. This affection does not less require measures of general treatment than does leueoma; but it is more manageable in pro-

portion as it is more directly under the influence of topical applications. In strumous ophthalmia especially, it frequently happens, that even during the period of inflammatory action, the nebula is so extensive as to constitute an object of considerable anxiety, and in this case I have found the greatest benefit from the use of general measures of support, combined with local treatment, at a period when the antiphlogistic practice would have been persisted in by some practitioners. The following case will prove a sufficient illustration.

A boy about twelve years of age, the distant relative of a very respectable surgeon, was sent to me for my opinion and advice under the following circumstances. He had been completely blind as regards all useful purposes of vision, for two years, during which period he had submitted to the most active antiphlogistic treatment. He came to me with his eyes carefully bandaged up; on removing the bandages, and attempting to get a view of the eyes, there was much spasmotic contraction of the lids, a gush of tears, and violent sneezing. With difficulty I ascertained that the cornea of both eyes was completely obscured by a great number of blood-vessels ramifying over their surfaces, and by the extent of nebulous opacity. The state of the deeper structures I was utterly unable to ascertain, and as the case was sent to me as one of which but little hope was entertained, I could not venture to give a very flattering prognosis.

Considering, however, the case to be one of strumous ophthalmia, and that the conjunctival covering of the eye was the only or main seat of disease; entertaining also opinions diametrically opposed to those upon which he had been hitherto treated, I commenced with a brisk aperient, dropped a little of the liquor plumbi into each eye, ordered him to leave off the bandages, and to change his hitherto meagre and vegetable diet for a mutton chop twice a day. I also ordered him the sulphate of quinine, to be commenced when the bowels had been well cleared out. After two days there was great diminution of pain, and much less intolerance of light; I was enabled to examine the eye more accurately and with less difficulty; satisfied with this degree of improvement, I continued the same plan, ordering the liquor plumbi to be dropped into the eye every other morning. With no alteration of treatment worth mentioning, the eyes most rapidly improved, much to the astonishment of the patient's friends,* who were not the less surprised at the improvement from the very different method of treatment adopted,

* Amongst whom I may mention Mr. Waugh, a highly respectable chemist in Regent Street. The mother having accidentally taken my prescriptions to him, he was much attracted by the pitiable condition of my young patient; and discovering that his parents were in greatly reduced circumstances, with a liberality most praiseworthy, supplied all his medicines gratuitously, and moreover, otherwise exhibited throughout the greatest interest in the case.

from what they had before considered requisite. In less than a year the boy was quite recovered. The cornea now remains entirely clear, and vision perfectly distinct.

Other forms of opacity of the cornea occur, as the area senilis in old people; this, although a permanent form of opacity, from its situation is not prejudicial to sight. It is probably rather due to degeneration of the cornea itself, and not to any inflammatory deposit, and be-speaks a feeble and impaired condition in the ultimate vital functions of growth itself. I have never seen it interfere with vision, by spreading over the pupil. All forms of ophthalmia may be attended with a more or less turbid condition of the cornea, especially those arising from mechanical injuries. Pressure on the globe in the ox, horse, &c., has been found by direct experiment to have this effect; dogs are very subject to it in connexion with the presence of worms in the alimentary canal; these forms of opacity are dependent upon a more fluid deposition of a turbid character; they are generally transitory, and go off on the removal of their exciting cause.

STAPHYLOMA.

Staphyloma might be included amongst the various conditions of the cornea, which present a dense opacity; but in staphyloma this is neither the only or the most serious part of the affection; as it still further consists in a bulging out of the cornea, which is protruded be-

tween the lids. The name of this affection is of Greek derivation, and due to the fancied resemblance of its appearance to a grape. In this form of disease the iris frequently becomes adherent to the posterior surface of the cornea. The tumour thus occasioned becomes a source of much pain and inconvenience, often inducing morbid conditions of the lids upon which it presses ; the patient is thus subjected to frequent relapses of inflammation of the affected eye ; whilst by sympathy the other eye is apt to become weakened and unfit for exertion, or even to be affected by various forms of ophthalmia. The secondary inconveniences arising from staphyloma will be proportioned to its extent, and the state of health and susceptibility of the patient ; left to itself, however, the disease has little disposition to become materially mitigated ; that it should remain stationary is as much as can be expected, whilst it far more frequently tends to increase in bulk, and ultimately to slough or ulcerate, and so afford escape to the contents of the globe.

The cause of staphyloma is invariably inflammation, whether from mechanical injury or otherwise, of the various structures of the eye, more especially of the cornea ; and it frequently results from purulent, strumous, or variolous ophthalmia. The bulging, grape-like appearance is due to morbid conditions of the cornea, by which it loses its dense character and powers of resistance to the pressure from within ; or it may be that such

pressure is greatly increased by the various effusions caused by inflammation of the deeper-seated structures of the eye.

Any variations in the appearance of different cases of staphyloma are chiefly due to varieties in the degree and extent of the affection. The period of its existence at which we are first called upon to treat it, makes a great difference in the degree of relief which it may be in our power to afford.

In the more limited forms of the disease, when the entire cornea is not affected, and the iris is either not at all or but partially adherent, and especially if called in early, by attention to the general health, removing every degree of inflammatory action that may still be going on, allaying as much as possible the irritation of the lids, &c., we may sometimes succeed in obtaining, though, perhaps, not a perfect, at least an useful degree of cure. The puncture of the cornea with the extract knife, to relieve the pressure occasioned by distension of the anterior chamber, will sometimes in this state be justifiable; whilst in the more extensive and confirmed state of the disease, such treatment not only frequently diminishes the sufferings of the patient, and prevents the occurrence of mischief in the lids, but sometimes even is attended by such a permanent degree of relief as to leave the eye eventually less prominent; and the patient suffers no further inconvenience beyond that which he was before

necessarily subjected to—loss of sight. Should this puncture fail to produce so desirable an effect, it will often be advisable, both for the sake of preventing further mischief, and for the future comfort of the patient, to anticipate the work of nature by removing a portion of the cornea, which allows of the escape of the aqueous humour, lens, &c.; the aperture then contracts, the remaining portions of the globe shrivel up, and the patient is enabled to wear an artificial eye, which, from the present skill in their manufacture and adjustment, seldom produce much inconvenience; and are made so exactly to correspond to the natural eye in appearance, as to afford a great relief to the disfigurement which such a disease occasions. This operation is very simple in its performance, and not generally attended with very great pain. An incision should be made through the upper part of the cornea, and carried downwards, removing such a portion of it as may be requisite. The cornea may be seized with the ordinary tenaculum, and the assistant, in steadyng the eye and lids, should be careful to avoid pressure as much as possible. Some attention should be paid to the state of the patient's general health both before and after the operation, which should be performed with the greatest gentleness. During my professional studies in this metropolis, I once remember to have seen this operation prove fatal, from neglect of such measures of precaution.

PTERYGIUM.

Pterygium, so called from the resemblance it has to a wing, is a disease of the conjunctiva. It consists in a triangular growth, the base of which is situated at the inner canthus, and the apex extends towards the centre of the cornea. Firmly attached at its base and apex, it simply rests upon the cornea, in its course, so that it can be easily raised by a probe; this growth assumes various shades of colour and degrees of density, but is for the most part highly vascular. The slow progress which pterygium usually makes, the absence of all pain throughout the whole period of its growth, and the general inability of the patient to give any account of its origin, makes it questionable whether this disease can be fairly considered to originate in inflammation; in some cases, however, I have had unquestionable evidence of the fact, and as the disease does not deserve an especial chapter to itself, I have, for convenience sake, classed it amongst the sequelæ of the inflammatory affections.

Pterygium would scarcely need any interference but for its liability to spread over the transparent cornea and thus obstruct vision; no means are of much avail for its relief or cure, except its removal by operation; this is easily effected by raising it with the forceps, and shaving it off at its base and apex by means of the cataract knife. A reference to the report of the Bombay Eye Infirmary, will show how prevalent this disease is in tropical cli-

mates compared with our own. I have only once found it actually necessary to remove pterygium since my return to this country; and this, too, in the case of a captain of a ship, who had passed much of his time in India and China, where the affection was first observed to commence.

AFFECTIONS OF THE HUMOURS—HYDROPHTHALMIA.

The aqueous humour is liable to undergo some variations in quantity, as the result generally of some forms of ophthalmia. It is often so much augmented as to constitute what is technically termed hydrophthalmia—dropsy of the eye: under these circumstances, it is commonly rendered somewhat turbid, and sometimes also is directly mixed with puriform matter or shreds of lymph; the distension thus made upon the cornea induces protuberance of this membrane as in staphyloma, the cornea itself often remaining perfectly transparent, to which the term staphyloma pellucidum has been sometimes applied. After the removal of the inflammatory affection which first gave rise to this condition of the aqueous humour, the restoration of health would appear to offer the best hope, that the functions of secretion and absorption should be restored to their proper balance, and the affection thus removed; and such indeed is the case, at least the affection may be rendered stationary, and the power of vision, though somewhat incommoded, be retained. Perfect

eure is, however, by no means frequently obtained when this affection has attained any considerable extent. Puncture of the cornea, to let off a portion of the aqueous humour, tapping in fact, can be resorted to. Mr. Wardrop has strongly advocated this operation, whilst other authors of repute have as strongly condemned it. I have, myself, occasionally performed the operation ; the immediate effect being a temporary relief, and in some few instances a radical cure ; in most cases, however, the aqueous humour is so rapidly reproduced, as either to call for a frequent repetition of the operation, or the disease is left in its former state. The result of my own experience is, upon the whole, unfavourable to the operation ; for in some instances it has been followed by considerable local mischief, ulceration, and bursting of the cornea, staphyloma, &c.

AFFECTIONS OF VITREOUS HUMOUR—GLAUCOMA.

The vitreous humour is the part of the eye mainly implicated in the affection called glaucoma ; the term humour cannot be with propriety applied to a structure of the character of the so-called vitreous humour ; it is, however, better to retain old names, though not perfectly correct, than to risk confusion by the adoption of new ones. The distinction, however, should be borne in mind as being one of some importance, the aqueous humour, which occupies the anterior chamber of the eye, is truly a

humour or liquid, and cannot therefore be the seat of disease in itself, it may certainly be too abundant, or too scanty in amount or turbid in appearance; but such states are due to changes in the functions or structures of the surrounding parts, whilst the vitreous humour is a living structure, of a gelatinous consistency, and may be the primary seat of disease.

Glaucoma is generally somewhat slow in its progress ; it may or may not be attended by pain in its earlier stages, and the sight is not entirely lost at first, but becomes gradually more and more dim ; in examining the eye, the pupil is generally found more dilated than natural, and the iris is very sluggish in its movements ; the external parts of the eye have lost none of their transparency and brilliancy ; but instead of the dark appearance presented by the pupil, we find a greenish cast, sometimes quite clear, at others more or less turbid. This state of things may go on with no material alteration beyond an increase in these phenomena, ending in total blindness ; or other structures of the eye may become affected, more especially the crystalline lens, constituting the complication of cataract with glaucoma, a subject of some importance, and to be noticed hereafter.

Although the vitreous humour has by some been considered the chief seat of this affection, such is not always the case ; morbid anatomy has discovered changes in the choroid coat of the eye, and the retina, as well as in the

vitreous humour; it is true that such examinations must generally have been made at a period when the disease has probably existed a length of time, and when, therefore, the disease was more likely to have occupied the neighbouring parts; but it must be remarked that such changes have sometimes been found in these parts without any marked alteration in the appearances of the vitreous humour itself; and it occasionally happens too, in life, that where both eyes are affected by glaucoma, vision is least impaired in that eye, the appearance of which would indicate the greatest amount of turbidness of the vitreous humour; showing, therefore, that other parts of the eye must be implicated in the affection.

TREMULOUS IRIS.

A tremulous condition of the iris would appear to indicate a change in the structure of the vitreous humour from its gelatinous to a more fluid consistency. Such condition is quite irremediable, but does not necessarily imply blindness. When found in complication with cataract, which is not unfrequently the case, it does not, therefore, preclude the propriety of operating by depression, or the mixed operation to which I shall have presently to refer; although from the fluid state of the vitreous humour it must render the operation by extraction, to say the least of it, extremely hazardous. Probably due to the same cause, from the injury inflicted upon the cells of

the vitreous humour, this condition is frequently observed after operation for cataract, (chiefly extraction,) but is seldom attended with any serious inconvenience.

TREATMENT OF GLAUCOMA.

As in most other diseases of the eye, the lancet and powerful antiphlogistic treatment has been strongly advocated in the treatment of glaucoma. There are, certainly, a few cases in which glaucoma, occurring to persons of robust and plethoric frame, is ushered in by considerable pain of the globe and temples, the indistinctness of vision being proportionately greater than the degree of visible mischief would lead us to expect. Such are probably to be regarded rather as cases of inflammation of the choroid coat, or of the retina itself, and may require and be benefited by this form of treatment. But such cases are comparatively rare, and moreover the assistance of the oculist is frequently not required until the disease has existed for some length of time, and gone beyond that point at which such measures have the power of arresting it. In my own experience of the treatment of glaucoma, I must confess that for one case which has required antiphlogistic treatment, ten have required the opposite plan, those measures which tend to promote the general health having always proved the most successful in arresting the progress of the local affection. This disease is unfortunately rarely cured, and the patient and practitioner

must consider themselves fortunate if some improvement of vision is obtained, and the further progress of the affection arrested or retarded.

CLOSED PUPIL, AND THE OPERATION FOR.

The iris is liable to become permanently adherent to the neighbouring structures through the medium of the strongly adhesive lymph which is effused during the process of the inflammatory action. From the exquisite sensibility of the eye to light during the existence of almost all forms of acute ophthalmia, the iris is prone to contract, and therefore such adhesions mostly occur to the iris in its contracted position. It may readily be understood how such a permanent contraction of the pupil is prejudicial to sight; but in such cases this is seldom the only mischief done to the eye; lymph or pus may have been poured out into the anterior chamber, the crystalline lens may have suffered in the same process, and its capsule or entire structure have been rendered opaque, or the transparent cornea may be affected by nebula, leucoma, or even staphyloma. A still more formidable complication may exist in the injury to the deeper-seated structures of the eye; a complication which precludes all hope of relief by any operation directed to the mere state of the pupil alone.

Before entertaining the question of operating for closed pupil, it is therefore absolutely necessary that we should

take all measures to ascertain whether the retina and other deep-seated parts of the eye are in a condition to take advantage of the light which may be thus thrown upon them by the formation of an artificial pupil. The eye should be carefully examined as to the state of the whole globe, whether it be much altered in size and shape, and above all, whether the patient is able to distinguish light from darkness, for unless other disease exist, the affection of the pupil is rarely such as to preclude some few rays of light from falling on the retina, and thus the patient is at least able to distinguish light from darkness ; if such be not the case, but little or no hope can be entertained for the success of any operation.

Many systematic writers on the diseases of the eye have, at very great length, discussed the variety of circumstances which require, and the variety of modes of performing the operation for artificial pupil. Such works, and especially the treatise of Mr. Lawrence, may be consulted with advantage ; but it must be borne in mind, that this operation, under any circumstances one of considerable delicacy and nicety, should not be ventured upon by any one who has not already attained considerable experience in ophthalmic surgery, both by witnessing the practice of others, and by having obtained personal tact and skill in the delicate operations on this organ. Such operations are not, indeed, to be learnt by mere written descriptions, whose chief use is to refresh the

memory and give increased confidence to the practitioner whose practical tact has not had the advantage of repeated and constant application. There is, however, some risk of confusion in these very minute details; and I am confident that in this, as in many other branches of operative surgery, more advantage arises out of simplicity in the selection of instruments, and strong common sense in their application, than from that misapplied scientific refinement, which rather confuses than assists the practitioner, by constantly endeavouring to multiply the resources of our art, in conformity with the almost endless variety of forms of disease; varieties presenting shades of difference, to be met by the common sense and tact of the practitioner, rather than by the complication of his instruments. The truth of these observations is especially remarkable in the operation for artificial pupil, in which it is frequently necessary, during its process, to adapt our proceedings rather to the circumstances of difficulty that may arise, than to any pre-conceived theory respecting the peculiar advantages of this or that instrument or mode of operating.

Cheselden appears to have succeeded in the operation for artificial pupil, by a simple incision of the iris with a minute knife. In these cases the iris must have retracted so as to leave the cut surfaces gaping and widely apart. Subsequent trials of this method, however, have not been equally successful, the iris not having retracted; the

incision remained simply as a mere line or cut, not sufficiently open to allow of the admission of sufficient rays of light. The most suitable operation for all cases consists in the division of the cornea by the knife, as in the operation for extraction to a sufficient extent as to allow of the introduction of scissors adapted for the purpose, by which a portion of the iris is to be cut away, which will generally, as a matter of necessity, be of a somewhat triangular shape, the segment of a circle;—a minute hook will also be necessary, either to hold the iris whilst dividing it, or to remove it after its section. It is sometimes possible to effect the division of the iris by means of the knife, without the introduction of the scissors. Such, however, cannot be always done; the operator should therefore have arranged by his side such instruments as circumstances may render necessary, during the process of the operation.

Where closure of the pupil is combined with opacity of the lens, it is desirable to remove the lens at the same time through the opening made in the cornea; but if such an object cannot be effected without much violence to the eye, it is safer to leave it undisturbed, if sufficient space can be obtained for the ordinary purposes of vision, beyond the edge of the opaque pupil.

In selecting the situation for the artificial pupil, we are not always enabled to fix upon that which is the most convenient. Opacities of the cornea, which so frequently

complieate the affection, often oblige us to form the artificial pupil in that situation only in which the cornea is sufficiently transparent to admit the ingress of light.

The operation is occasionally, but very rarely, required where no adhesion or other disease of the iris exists, but where central opacity of the cornea occupies such an extent as to leave the patient in darkness, even if the pupil be made to dilate under the influence of belladonna.

It need hardly be remarked, that where one eye only is affected, the other remaining quite sound, the operation is inadmissible; and where both eyes are affected, but in different degrees, the operation should be performed on one eye only, and it is always desirable to select that which is the least seriously affected.

The degree of vision that may be obtained from this operation, must of course vary under many circumstances. The artificial pupil is not susceptible of those variations in its dimensions by which the natural pupil accommodates itself to the various shades of light. This disadvantage is, however, somewhat compensated by habit. In the worst cases, sufficient vision to enable the patient to find his way about and regain his independence, must be considered a great boon. Sometimes the operation is so successful, as to enable him to enjoy the more refined gratifications of the exercise of this precious organ, in restoring to him the beauties of nature, and the power of reading.

CHAPTER V.

AFFECTIONS OF THE VARIOUS APPENDAGES OF THE EYE—OF THE LIDS—
GRANULAR LIDS—LIPPITUDO AND TINEA—THICKENED TARSUS—ITS PRE-
VALENCE AND SEVERITY IN CHINA—TRICHIASIS—ADHESIONS OF THE
LIDS—PTOSIS—OF THE LACHRYMAL APPARATUS—AFFECTIONS OF THE
LACHRYMAL GLAND—PROFUSE SECRETION OF TEARS—DEFICIENT—OF
THE LACHRYMAL SAC AND DUCT—OBSTRUCTION—FISTULA LACHRYMALIS,
&c.—STRABISMUS OR SQUINT—TUMOURS OF VARIOUS KINDS—CANCEROUS
ULCERATION OF CHEEK AND LID—ENTROPIUM—ECTROPIUM.

THE various parts connected by their locality with the eye, and whose functions are subservient to this important organ, are liable to many forms of disease, whether peculiar to the parts themselves, or as forming part of more general and diffused morbid influences.

The lids may be the seat of inflammation due to local influences or constitutional causes; such inflammation may go on to suppuration, ulceration, thickening, &c. When the fleshy mass of the lids is affected by inflammation, suppuration is by no means uncommon; it may occur from the causes which ordinarily give rise to phlegmonous inflammation, or as the result of common stye, in the course of erysipelas of the head and face, small-pox, &c. The treatment to be adopted differs in no

respect from that which the practitioner would have recourse to in other phlegmonous inflammations of like extent and degree. In the ordinary purulent ophthalmia, it has already been stated, that the inner surface of the lids is the part first affected. And it was also explained how this, and it may also be said some other inflammatory affections, are liable to induce that thickening of the parts properly called granular lids, because due to the rank and luxuriant granulations which spring up from the surfaces thus abraded.

Such a state of the inner surface of the lids, when it has gone to a great extent, occasionally requires the actual removal of the thickened portions, either by the knife or scissors; for the affection is not only painful in itself, but leads to much mischief, partly as setting up a degree of mischievous irritation of the globe of the eye by its pressure, and the constant determination of blood to the parts, and enfeebled state of the conjunctival vessels it occasions; partly, too, from the injury thus inflicted on the margins of the lids, and from its causing the eversion of the lids themselves, a state of disease to which the distinct term ectropium has been applied.

It is not, however, often that the extent of granulations is sufficient, either to render their removal by knife or scissors absolutely necessary. The free application of the blue-stone to the parts is generally sufficient to destroy the excessive granulations, and to check the activity

of their growth. The lid should be everted, and the solid blue-stone passed once or twice lightly over the parts, the lid being still held down for a few seconds, to enable the increased secretions of the parts to protect the ball of the eye from the actual contact with the mineral which is still adherent to the lid; or a little mildly astringent lotion may be thrown over it with a syringe to effect this purpose.

It must not, however, be supposed, that in these cases this is the only treatment required. This, indeed, may be repeated every other day, and an astringent collyrium be used; but I have repeatedly observed, that unless considerable attention be paid at the same time to the general health, such treatment is either very long in effecting its purpose, or sometimes even utterly useless or injurious. Purgatives, alteratives, tonics, proper attention to air, exercise, and diet, constitute the main objects of general attention.

The lids are frequently implicated in various forms of eruptive diseases which affect large portions of the body, as the small-pox, crustea lactea, secondary syphilitic eruptions, &c.; in such cases the affection of the eyelids will require little more attention than is directed to the prevention of further mischief; the affection itself will generally subside with the removal of the more general disease, or it may, if badly managed, leave states similar in their character and the treatment they

require, to those which have been, or will hereafter be described.

TINEA AND LIPPITUDO.

Two forms of disease of the lids, differing but little in their character and still less in the treatment they require, come now to be mentioned, tinea and lippitudo. Tinea may be fairly classed amongst the eruptive diseases; it is most common amongst young persons, and especially those of a strumous habit of body; the primary seat of the affection is probably the Meibomian follicle; a small pustule or vesicle is established, which bursts, discharges an irritating secretion, and often dislodges the eyelash; the minute ulcer thus occasioned is then often covered by a small crust or scab, matting together several of the lashes, and thus increasing the irritation of the parts, and offering an impediment to the direct application by contact of our local remedies. Like most other eruptive diseases affecting the whole skin, or large portions of it, some difficulty is experienced in tracing the progress of the affection minutely, from the fact that the disease is in different stages of its progress in different parts; this difficulty equally applying to some other forms of eruptive disease, is the more felt in this case from the limited sphere occupied by the disease, and the pressure of the eyelashes. The affection is attended by considerable itching of the parts, often, too, by some

degree of intolerance of light or weakness of the eyes; there is considerable redness of the margins of the lids, and increased secretion of tears.

Lippitudo is more frequently observed amongst persons at a more advanced period of life, and generally in connexion with habits of intemperance, especially spirit-drinking; or from exposure to cold air, &c. The primary seat of this affection appears to me to be in the palpebral conjunctiva, which is usually found vascular, and somewhat thickened. The secretions are more or less vitiated. This affection is most frequently observed during the winter months, and the prevalence of cold winds. Like tinea, it is attended by considerable itching of the parts, and often by enfeebled vision; and in both cases the increased and vitiated glutinous secretions from the eye are such as sometimes to glue together the lids at night, and to cause some degree of irritation of those parts of the cheek with which they come in contact.

Both affections are almost universally found either connected with, or even absolutely arising out of, states of general health, and it is to such states that our treatment should be mainly directed. The removal of such exciting causes as may exist, in the carelessness or bad habits of the patient, is the first point to be attended to, and the next is, to procure a more healthy condition of the functions of the liver and alimentary canal, on the primary derangement of which the disease most frequently

depends. Purgatives will generally be required, and almost invariably some alteratives; a light and nutritious diet, the moderate use of such stimulants as table-beer or wine, according to the age and habits of the patient; regular habits and proper exercise in the open air should be enjoined.

As local applications, mildly astringent and stimulating collyria may be used, and mildly stimulating unguents, as the unguentum hydrargyri nitrico-oxydi, unguentum hydrargyri nitratis, &c., which should be diluted according to the necessities of the case; and indeed considerable variations will be found in the comparative efficacy of the different local applications, dependent upon individual peculiarities which can be predicted by no general rules, but must be learnt by experience and observation. Previously to the application of these ointments, the lids should be carefully dried by means of a piece of soft linen, in order to secure their contact with the affected parts. Some mild astringent ointment, as that of the oxyde of zinc, will often be found an useful application in protecting the parts from atmospheric influences, and in preventing the accumulation and thickening of the secretions. Of all local applications, however, whose use is attended with the most permanent advantage, that of copious and frequent ablution of the parts with cold water is the most important. It is a remedy within every one's reach, and one which is not only beneficial

as regards the disease in its existing stage, but gives to the parts that degree of permanent tone which is most likely to prevent a recurrence of the affection.

In tinea, when the lashes are very much and universally glued together, their extraction has been recommended by many oculists for the purpose of removing the incrustations, and allowing of the contact of local remedies; such a practice is rarely necessary; under such circumstances, tepid fomentation of the parts and the free use of some simple ointment will soon enable us to remove the incrustations with the point of a probe, and then to make use of such other local applications as may appear requisite.

THICKENED TARSUS.

All the various forms of chronic inflammation affecting the lids and Meibomian glands are liable, if long continued, to induce a permanent thickening in the edges of the lid, known by the technical phrase of the tarsus. Thickening of the tarsus more frequently occurs in the lower than the upper lid. This affection in its slighter shades is of comparatively little moment, and requires a plan of treatment very similar to that which has been recommended for tinea and lippitudo. When, however, it is attended by some degree of inversion of the lid, and pressure of it, or the cilia upon the globe

of the eye, it may become a source of considerable annoyance and mischief.

A degree of this affection, to an extent almost unknown in this country, has been occasionally witnessed by myself in India, but still more frequently in China; owing in part, as I am inclined to think, to the natural peculiarity in the shape and form of the eyelids amongst the Chinese. In this exaggerated and aggravated form the disease produces the greatest mischief to the eye both by the pressure of the lashes on this delicate organ, and by the pressure of the lid itself, which is swollen into a thick and hard tumour. I have myself several times had occasion to remove the entire lid.

When in China, my friend Dr. Colledge, now residing at Cheltenham, superintended a large eye infirmary at Macao, which he had himself established and conducted with great zeal and talent. During a residence of two months in this city, I very constantly visited this eye infirmary, and Dr. Colledge drew my attention to the great prevalence of this affection. The tarsus in these cases became enormously large and callous, producing by its pressure on the cornea so much irritation as to be frequently the cause of sloughing.

The operation is very simple; having grasped the lid with the fingers, forceps, or tenaculum, should be removed the thickened portion of the lid by one single semicircular incision from the one to the other

edge of the lid. Dr. Colledge showed me a great number which he had thus removed and kept in spirits, and I had the opportunity of examining several patients upon whom he had performed this operation some years previously, the success of which had been quite perfect as respected the removal of all source of irritation to the globe, and the disfigurement was much slighter than would have been supposed,—far less indeed than that which originated from the disease itself.

TRICHIASIS.

Trichiasis is the technical name which designates the inversion of the eyelashes, by which they touch the globe of the eye, thereby causing constant irritation of this organ. In India, as well as in England, I have been frequently consulted in various forms of ophthalmia, ulceration of the cornea, &c., which I have found to be due to this inversion of the eyelashes, although such cause had not been suspected by the patient himself.

Trichiasis differs from entropium, inasmuch as that in the former affection the whole blame rests in the misdirection which the eyelash takes in its growth, whilst in the latter case the eyelashes are necessarily inverted and made to press upon the globe from the inversion of the lid itself.

I know of no remedy for trichiasis, properly so called. To prevent the mischief, which the eye is liable to incur,

the inverted lashes must be plucked out by means of a pair of tweezers or forceps. This is alone generally sufficient to procure instant relief to, and cessation of, the inflammatory affection of the eye. Should this, however, have been firmly established, such measures must be employed as the nature and extent of the affection may call for.

No measures with which I am acquainted can, with certainty and confidence, be employed to prevent the further growth of these lashes in their inverted position. Their removal sometimes constitutes a perfect and radical cure; but much more frequently they spring up again, and require a repetition of the same process of extirpation. It is often, therefore, desirable to show our patient how he may do this for himself, by which means he will be enabled, by the early removal of the lashes, to prevent any subsequent serious inconvenience.

The plucking out of the lashes cannot, however, always be entrusted to the patient, for they are not unfrequently perfectly white, and are therefore not easily detected; in this case the operator may require the assistance of a strong magnifying glass, to enable him to detect and remove the offending lashes.

ENTROPIUM.

Entropium, then, differs from trichiasis, inasmuch as that, in this affection, the edge of the lid is itself turned

in upon the globe of the eye, and with it, as a matter of course, the eyelashes which grow from it. Entropium may be caused by a variety of circumstances, as some forms of inflammation of the eye or its appendages, mechanical injuries, &c. It not uncommonly happens that in old persons, when the fat which had distended the loose cellular texture of the lower lid has been absorbed, that the parts are rendered loose and flabby, and thus, by the action of the edge of the orbicular muscle, the lid is inverted; the same may occur on the sudden subsidence of œdematosus or other swellings, by which this part had been for some time previously distended.

The great mischief that may arise from this form of disease has been already sufficiently described, when speaking of the peculiar form of thickened lid so frequently observed in China, and of trichiasis.

The treatment of this affection may be considered as palliative or curative. The palliative treatment consists in the application of a strip or two of adhesive plaster, so applied as to retain the lid in its natural position, and to prevent its turning in. To this plan may be added the use of such measures, whether general or local, as are most likely to remove the causes on which the affection depends, or to give increased tone and contractility to the loose texture of the eyelids. Copious ablution with cold water, and the use of astringent collyria, will be found serviceable. The curative treatment must consist in the

removal, either by the scissors, knife, or some escharotic application, of a portion of the integument, extending the whole length of the lid. If this removal be effected by means of cutting instruments, the lips of the wound are to be brought together by sutures; or if by the cautery, they will afterwards unite by granulation, and thus the lid is kept permanently from resuming its inverted position. The operation by the knife is the quietest done, the most effectual, and the least painful and annoying to the patient; it presents this advantage also, that we are thus enabled to remove the exact portion of skin which is requisite for the success of our operation. Both in this affection, and in the more obstinate and severe cases of trichiasis, some practitioners have recommended the dissecting out of so much of the edge of the tarsus as will secure the removal of the bulbs of the eyelashes, an operation rarely necessary in simple trichiasis, and obviated in the present instance by the milder and simpler operation just described. Whereas in the form of disease spoken of as so peculiar to China, this operation is not sufficient, for it is not the inverted hair alone, but the thickened and indurated edge of the tarsus, which constitutes a perpetual source of irritation to the eye.

As entropium may be a temporary, or permanent affection, it is generally better, in the first instance, to try the palliative mode of treatment; and this, indeed, will often be sufficiently successful, when the disease occurs in

elderly persons, and is not attended by any very serious inconvenience. If, however, the disease be permanent, and induces much mischief to the eye and other inconvenience, the radical cure should be employed, which is, after all, an operation of but slight pain and no difficulty. Entropium more frequently occurs in the lower than the upper lid.

ECTROPIUM.

Ectropium, which may be said to be the very reverse of the disease just described, is also more frequently observed in the lower lid. It consists in an eversion or turning out of the lid, by which its inner surface is exposed to view, and the patient is consequently much disfigured in appearance; nor is this all,—the globe of the eye, as well as the inner surface of the lid, are thus exposed to atmospheric influences, and cease to experience the benefit of those lubricating secretions which are constantly in health smeared over their surfaces, by the frequent habit of winking, or opening and shutting of the lids. From this, results chronic inflammation of the outer tunics of the globe and lids, with thickening, opacity, congestion of vessels, &c.

The causes of ectropium are various; it may occur in the course of some forms of acute ophthalmia, especially the purulent, from the thickening of the palpebral conjunctiva and chemosis; or in the more chronic state of granular lids. It frequently occurs from diseases or

injuries to the lids themselves, especially burns, by which large cicatrices are formed in the lids, which draw down and out the margin of the lid itself. Tumours growing from the inner surface of the lids will not unfrequently induce ectropium; and it is sometimes observed in old persons to be due partly to some thickening of the internal lining membrane of the lids, and partly to a degree of atony of the orbicular muscle almost amounting to paralysis.

The treatment must of course depend upon the circumstances which have given rise to the affection, and must be further modified by its extent, the degree of mischief arising from it, the amount of the deformity, and the anxiety of the patient to be relieved from it. If the inner surface of the lid be much thickened and granulated, the ectropium will be relieved or entirely cured in proportion to the degree in which such affection is removed, the various methods of effecting which have been already noticed. Tumours from the inner surface of the lid will require to be removed. Ulcers or cicatrices of the lids, occurring from burns or other injuries, will often admit of some relief, by means of various surgical operations; and much skill and practical tact is often required, on the part of the surgeon, to relieve, by operation or other treatment, those contractions and cicatrices which cause eversion of the lid. It is hardly necessary to observe, that some few cases are entirely beyond cure.

ADHESIONS OF THE LIDS.

Adhesions of the eyelids to each other, through the whole or a part of their extent, and more or less adhesion of the lids by their inner surface to the globe of the eye, constitute rare forms of disease. Such affections are occasionally congenital, but more frequently occur as the result of inflammation and ulceration, especially when arising from the admission of quick-lime or other highly irritating substances into the eye. Such cases, if sufficiently extensive as to require any treatment at all, can only be relieved by carefully dividing the parts so glued together; great care and attention will, however, be required, to prevent the parts when separated from growing together again, which cannot always be entirely prevented.

PTOSIS.

Ptosis consists in the dropping of the upper lid, which the patient is unable by any voluntary effort to raise. It depends upon paralysis of the muscles whose office it is to raise the lid; and may therefore be due to important forms of cerebral disease. It is occasionally, however, congenital, and not unfrequently depends upon affections of the nervous or muscular fibre exterior to the brain itself, being one specimen of that form of facial palsy which Sir Charles Bell was the first to discover was not dependent upon any mischief within the cranium.

Accidents too of various kinds to the lid or supereilia, may occasion this form of local paralysis. In some persons, especially those far advanced in life, the affection appears rather due to a debilitated enfeebled condition of the muscular fibre itself, than to actual paralysis.

The importance of the ease, as well as the appropriate treatment, will, of course, depend upon the cause. In the one ease it is merely a symptom of a far more important form of disease, in the other it constitutes in itself the only feature of importance. It will, therefore, be necessary carefully to inquire into the circumstances under which the affection came on, and the state of the functions of the brain and nervous system generally. If the case be one of local paralysis it will generally have been found to come on in connexion with exposure to cold or direct local injury ; and in this case, as well as when due simply to muscular debility, slightly stimulating applications to the part, and a tonic and invigorating plan of general treatment must be adopted. In the instance of congenital ptosis, Mr. Lawrence has recommended, with great propriety, the removal of a great portion of the skin, from the whole length of the lid, as in the case of entropium. If ptosis, however, depend upon organic lesions within the cranium, such treatment must be adopted as the nature and character of that disease may require, the affection of the eyelid must be regarded as merely one symptom of the cerebral disease ; if this disease, how-

ever, be of an acute character, and should have yielded more or less quickly to the remedies employed, it will occasionally happen of the paralyzed eyelid, as of other paralyzed muscles, that some time elapses before it recovers its tone ; in this case the cure may sometimes be accelerated by local stimulation, and such measures as are calculated to expedite the return of the wonted health and tone of the system.

AFFECTIONS OF THE LACHRYMAL APPARATUS.

The lachrymal apparatus is liable to a variety of morbid affections. The lachrymal gland is occasionally, although but very rarely, affected by inflammation, either acute or chronic, and its structure may become the seat of several organic affections, as of hydatids, carcinoma, &c. ; such affections are all, however, of rare occurrence, and as they do not require any plan of treatment remarkably different from what similar forms of disease require when affecting other analogous tissues, it will not be necessary to occupy any further portion of the present limited treatise with their description.

The functions of the lachrymal gland are liable to be similarly affected to those of other glands, the secretion of tears being either deficient or excessive ; such alterations in the secretion will be generally traced to a derangement of the functions of the gland, originating in some primary affection of neighbouring or distant parts ; thus

many forms of ophthalmia have been observed to be attended with a copious secretion of tears. A troublesome degree of lachrymation will sometimes, however, be observed without our being able to trace it to such a cause, and we shall probably find that the patient's general health is impaired and the digestive organs are out of order; in this case, alteratives, tonics, and proper attention to exercise, diet, &c. will be the best general measures for its relief, whilst the local application of some mild stimulants to the eye, and the copious ablution of the parts with cold spring water, will be the measures of local treatment most requisite.

This excessive secretion of tears, technically called epiphora, must not, however, be confounded with another condition of the eye, in which there is also an apparent abundant flow of tears, but which in reality does not depend upon excessive secretion from the lachrymal gland; but upon obstruction of the ducts leading to the lachrymal sac, (technically called the puncta lachrymalia,) by which this secretion is prevented from flowing off by its usual channel, accumulates in the eye, and finally trickles over the lid. The cure of this affection must, therefore, be directed to removing such conditions of the puncta lachrymalia, as impede the flowing off of the tears through these apertures. It will often be necessary continually to dilate them by means of a very minute probe, commonly known as Anal's probe. The treatment being the

same as in the case of ordinary stricture of other canals in the human body.

An opposite state of things, or deficiency of the secretion of tears, is sometimes observed ; this occurs not unfrequently at the earliest possible stage of some forms of ophthalmia ; and as the disease advances, may be succeeded by the opposite condition of this secretion. The more permanent state of deficient secretion rarely depends upon obliteration of or blocking up of the ducts of the gland ; for happily, this organ is supplied with so many ducts or outlets, that should one or more be thus obliterated, others generally remain open to carry off the secretion and pour it upon the conjunctiva. As in the former case, we must carefully inquire into such conditions of other parts of the eye or system generally, as may complicate this affection, and whose removal may constitute the best means of relieving it. If it arise from organic changes in the gland itself, the curability of the affection will depend upon the nature and curability of the glandular disease on which it is dependent.

Inflammation may occur in the lachrymal sac, or nasal duct, either beginning in these parts or spreading to them from the inner angle of the eye ; such form of inflammatory affection is very liable to terminate in suppuration or abscess, a termination which we should use all our skill to avert ; and if it does take place, the earliest opportunity should be taken of puncturing it

to effect the escape of the pus. If from the result of such inflammation, or from caries of the bones of the lachrymal duct, a permanent artifical opening be indued communicating from the duct to the cheek, the form of disease is termed fistula laehrymalis. The cure of this fistulous opening must be conducted on principles exactly similar to those for the cure of other fistulous sores; such means as are necessary to seeure the free opening of the natural duct or passage, must be first resorted to, and then the fistula may heal of itself, or under the application of some stimulating substances to its edges, by whieh the proeess of granulation is promoted.

As the result mostly of these forms of inflammation, occur all the different kinds and degrees of obliteration or obstruction of the eourse of the laehrymal duct, whether attended with fistula or not. The inflammatory affection subdued, various ingenious expedients have been suggested for re-opening and keeping permanently dilated the obstructed passages; amongst these may be mentioned the passing of Anel's probe, his syringe for dilating the passage by the forcible injection of water, a plan for injecting quieksilver as a heavier body, and therefore more likely to force its way through the obstructed passages, &c.; it is evident, however, that the success of such measures must be proportionate to the nature and degree of the obstruction; in the milder eases, where the obstruction is not entire, and where there is no very great thickening of the

parts, any of these plans may succeed, whilst in other instances they will be of no kind of service. Under these circumstances, it is necessary to introduce some instrument along the entire course of the canal into the nose ; a small silver tube was at one time the instrument generally used for this purpose ; but subsequent experience proved that such a contrivance was the cause of much annoyance and suffering to the patient, whilst it was by no means necessary to use an open tube as a conduit for the tears, since the introduction of any metallic instrument kept permanently in its situation, was sufficient to enable the tears to flow between its surface and the parts through which it passed. Mr. Warc it was, who first introduced the silver stilet, which answers all the purposes, and is the instrument now in most general use.

STRABISMUS, OR SQUINT.

Strabismus, or squinting, has been placed in this chapter, because whatever may be the primary conditions upon which the affection depends, the actual divergence of the eye from its usual axis, is always ultimately caused by that want of harmony in the action of the several muscles of the orbit, by which the globe of the one eye is moved or retained at rest in correspondence with that of the other. Strabismus may affect one eye or both, and the direction given to the globe of the eye will vary in accordance as the one or the other muscle is enfeebled, pa-

ralyzed, or excited to increased action. The affection may be congenital, or commence in very early life ; it may be permanent or not. It is frequently observed in connexion with formidable derangement the brain, as in hydrocephalus, inflammation of the brain or its membranes, the states of brain complicating fevers, &c. It may also be due to the irritation from teething, or from the presence of worms or other irritating matters in the alimentary canal, and this, too, without any appreciable symptoms of cerebral disturbance.

In the former instance it is probable, therefore, that the affection is sometimes due to paralysis of one of the muscles, by compression of the brain at the insertion of the motor nerve ; or it may be due, as under the second instance it invariably is, simply to irritation of a nerve supplying the muscle, by which it is called into undue, and more or less, permanent contraction. Improper habits of using the eyes, as much straining of the organs in study, reading too small a print in a bad light, the incessant investigation of very minute objects, carelessness in the adaptation of objects to the natural focus of vision ; and even imitation may lay the foundation for this complaint, in which case it seems to be analogous to another malady in which the undue contraction of muscles forms a prominent feature—I allude to chorea.

The treatment of this affection must therefore be di-

rected to the removal of its causes ; it sometimes, however, happens that the strabismus is permanent and cannot be traced to any causes in operation at the time of our being consulted ; nor is it materially relieved by any treatment directed to the general health. Under these circumstances various expedients have been had recourse to in order to obtain a cure ; spectacles or other instruments have been so adapted as to preclude the admission of light to the eye, excepting in such directions as shall oblige the patient to retain the globe of the eye in its proper and natural position. It has also been advised to tie up the healthy eye for a short period at a time, several times a day, so that by forcing the other eye into action its muscles may acquire their wonted tone, and uniformity of action. These, and many other expedients, are often useful ; but should always be combined with great attention to the general health ; and if the patient be old enough, he may be taught in some measure to correct this malady by frequently shutting the sound eye, and thus voluntarily calling the muscles of the other into action. During the process of treatment, too great study should be avoided, as well as all arduous exercise of the organ ; and plenty of exercise in the open air, cold dash to the temples, and the sea-air and bathing, when practicable, should be recommended.

It is under these circumstances that the operation has been latterly performed, of dividing the tendon of the

muscle or muscles whose superior force draws the globe out of its natural position. This operation is an ingenious adaptation in the case of deformity of the eye, of the more generally applicable operation of division of the muscles or tendons. It must, however, be remembered that there is this great difference between the applicability of the operation in this instance and in the various other deformities to which the frame is liable, club-foot especially; that whilst in the latter case, mechanical means can be used to secure the parts in their natural position when thus freed from the restraint which has been removed; and whilst active bodily exercise is afterwards used, under proper directions, and at first with the application of mechanical apparatus for securing the natural position of the parts; in the case of the eye all must be nearly or entirely left to chance; and even should the first effect of the operation be attended with success, there is some risk that in the course of time the affection may return. Another difficulty exists in the fact, that although we perfectly well know that the one muscle or class of muscles are acting more powerfully than their antagonists, yet it is not always easy to determine whether the fault lies most in the over action of these, or the want of action in the other muscles. It is certain, however, that the operation has in many cases been attended with success, and in but very few, I believe, with any serious inconvenience. My own ex-

perience, however, leads me to think that this operation has been too frequently performed in compliance with the fashion of the day, if I may so express myself; more especially in the less formidable cases of children, many of whom would have done equally well or better without any operation at all.

A careful inquiry into the circumstances which may have originally caused, or complicated this affection, will often lead to the means of cure, and I have frequently succeeded in one class of cases by treatment directed to the general health, especially tonics, in obtaining a perfect cure, whilst I have as frequently observed in another, the entire failure of the treatment by operation.

It may seem extraordinary that in the immense number of cases included in the abstract given at page 12, twenty-three only of strabismus should have been enumerated. It must not, however, be forgotten that this abstract refers only to patients in a humbler sphere of life, who seldom or ever apply for professional assistance in the mere case of squinting. It will, however, be observed, that of their numbers one-fourth are reported as perfectly cured:—until the present operation came in vogue, I imagine that the greater part of the experience of most other oculists, as of myself, in the cure of strabismus, was drawn from practice in higher life, where such a deformity is a greater source of anxiety.

CHAPTER VI.

GENERAL REMARKS ON THE AFFECTIONS OF THE NERVES OF VISION—SEATS OF THE VARIOUS FORMS OF—INABILITY TO DISTINGUISH COLOURS—AMAUROSIS—GENERAL CONSIDERATION OF—SYMPTOMS, &c.—DEPENDENT UPON PRESSURE ON THE BRAIN OR OPTIC NERVES — BY TUMOURS — APOPEXY—MECHANICAL INJURIES—RUPTURE OF BLOOD-VESSELS—CONGESTION OF BRAIN—INFLAMMATION—AMAUROSIS FROM THESE CAUSES, OF HOWEVER LONG STANDING, AND APPARENTLY HOPELESS, IS OFTEN MOST UNEXPECTEDLY CURED—TWO CASES—AMAUROSIS FROM EXHAUSTION AND DRAINING OF THE BLOOD—FROM CONSTITUTIONAL DERANGEMENT—FROM MORBID IMPRESSIONS MADE UPON THE NERVES OF VISION—DIRECT—INDIRECT—FROM THE ALIMENTARY CANAL, &c., AS BY WORMS—USE OF STRYCHNIA—PARALYSIS OF PORTIONS OF THE RETINA—MUSCÆ VOLITANTES—NYCTALOPIA, OR DAY BLINDNESS—HEMERALOPIA, OR NIGHT BLINDNESS.

THE various nerves connected with the apparatus of vision are liable to numerous morbid conditions. Some allusion has already been made to affections of the muscles connected with the eye, due to morbid conditions of the motor nerves. The greater part of the present chapter will be devoted to what must be considered but a brief inquiry into some of the diseased conditions of the es-

pecial nerve of sight. To compare the eye to the most perfect optical instrument, the harmonious adaptation of whose parts is necessary to the fulfilment of their object, is indeed but a meagre comparison ; for to the eye is added the nervous expansion of the optic nerve, the retina, for the purpose of receiving the peculiar impression of sight, which has further to be conveyed along the trunk of the nerve to the brain ; and here we are entirely lost ; for little as we know of the nature of the impression made or the mode of its conveyance, we know still less of that exquisitely contrived after-machinery by which such impressions are connected with the great system of mind.

The nerve of vision is liable to an infinite variety of morbid conditions, whether, to speak in ordinary medical language, of functional derangement or organic lesion, from a transient derangement to a permanent and entire obliteration of vision. If farther reasoning need be advanced to explain how completely ophthalmic practice is connected with, and forms but a part of, medicine as a whole, it will be amply shown in the consideration of the functional or organic affections of the nerve of vision ; for whilst some of these are but types and symptoms of more serious local affections, and are constantly witnessed by all classes of practitioners, and regarded by them rather as useful indications of other states, than as the peculiar object of their curative efforts, other and more confirmed

cases come more especially under the care of the oculist ; and conditions differing only as respects the parts affected fall under different, artificially constructed, orders of the profession ; for whilst paralysis of some parts fall more especially under the province of the physician or surgeon, the same affection of the optic nerve comes under that of the oculist. Professional etiquette, therefore, (and for many purposes very usefully and properly,) has drawn distinctions which are not found in reality.

The morbid conditions affecting the perception of visual objects may be seated in the expanded retina, in the nervous trunks communicating the impression to the brain, the optic nerves, or in the brain itself. It is important to bear in mind this distinction, as leading in many instances to practical results ; it must not, however, be supposed that such distinctions exist in all cases of defective vision ; or existing, can be invariably traced to their proper seat. Some conditions of the system probably affect all these parts, as fevers, delirium, intoxicating liquors, bilious attacks, &c. Every medical practitioner is acquainted with the various extraordinary phenomena connected with the functions of sight which accompany many forms of fever, inflammation of the brain and its membranes, or delirium ; phenomena forming a subject of curious and interesting contemplation as well as most valuable symptoms in illustration of the comparative states of such affections. Such conditions, how-

ever, for the most part disappear with the removal of the disease as a whole, and as they seldom constitute the sole object of removal and cure, are rarely, if ever, witnessed by the pure oculist, in his practical department as such. The effects of stimulating liquors are pretty generally known to the public as well as to the profession; for even, far short of their intoxicating effects, they frequently induce some derangements of vision, and the expression of "seeing double," though seldom, perhaps, literally true, under the influence of such agents, has become a common phrase. Every one, too, has experienced or witnessed the effect of ordinary biliary attacks in inducing flashes of light, dark specks, *muscae volitantes*, and indistinctness of vision. It is even questionable whether the seat of some of the defective conditions of the organ of vision is not to be regarded as still deeper seated than those parts of the apparatus which we have been immediately considering; as is the case sometimes, perhaps, in fevers and delirium, and more especially in that very curious defect by which persons, whose powers of sight, in all other respects perfect, do not allow of their distinguishing one colour from another.

INABILITY TO DISTINGUISH COLOURS.

There seem some good grounds for that distinction of the phrenologists which would place the seat of this affec-

tion in some particular and separate portion of the brain ; but whether they have been right in fixing upon the particular portions to which they have attributed it, I am not competent to decide. The affection is usually congenital, although frequently not discovered till even advanced periods of life, often in some measure hereditary, and commonly unconnected with any other defects of vision ; so that we can hardly suppose the existence of either functional or organic defect in the retina, which receives visual impressions, the nerves which transmit them, or those parts of the brain to which they are first and directly communicated. I am not aware that these cases have ever admitted of cure, and have therefore little to suggest on the subject. As the error probably lies in a defective condition of that portion of the brain whose office it is to discriminate between the various impressions made ; if the affection be discovered in very early life, the treatment which would appear to me most rational, and most likely to be of service, would consist in frequent efforts to develop those powers by their constant and judicious exercise.

In the case of the ear, it not unfrequently happens that persons originally gifted with so little power of discrimination, as scarcely to be able to distinguish between one musical note and another, come, by frequent and judicious exercise of this function, to appreciate tones with a very considerable degree of accuracy.

In reference to the fact, that this defect of vision may exist even in the most marked degree without detection for many years, the following curious circumstance may be taken as an example. A gentleman residing in Edinburgh was destined by his parents to become a draper, to which occupation, however, he was extremely averse, his own inclinations having been always in the direction of some scientific profession, in connexion with some branch of chemistry or engineering. As a preliminary step, he was apprenticed to a highly respectable draper, when, on his first essay in his shop, much to the astonishment and annoyance of the customers, for green articles he brought red, and so on; and on several occasions matched the colour of articles shown to him for that purpose with others the most opposite and incongruous. This was at first set down to indolence or impertinence on the part of the young shopman, and was supposed to originate in his inveterate distaste for the occupation to which he had been destined. Of course, therefore, he got a plentiful share of abuse from his parents and his master, until observing the uniformity of his mistakes, upon further careful inquiry, it was found that he was actually incapable of distinguishing some colours from others, even in their most opposite and glaring shades of difference. Such mistakes, although often the source of hearty amusement and laughing to his fellow shopmen, became at last so intolerable a nuisance and inconvenience to his

master and customers, that he was obliged to quit his occupation, to the mutual satisfaction of himself and his employer. He now sought his fortune in occupations more congenial to his tastes and powers. He rose to great eminence in a profession of a more scientific character, and is now living to enjoy a large and well-deserved fortune, and universal respect in his position of society. Even at his present advanced age, his sight is perfectly good, as is evineed, amongst other things, in his being an ardent and successful sportsman. He still, however, remains perfectly unable to distinguish those distinct colours and shades of colour, which caused him so many of his youthful troubles.

AMAUROSIS.

To return, however, to the more immediate subject of the present chapter, it may be stated that amaurosis, or, as it was frequently termed by the older writers, gutta serena, probably from some particular notions of its pathology, is generally and pretty justly considered to be due to paralysis of the optic nerve; though, as before hinted, the cause of such paralysis may be in the expanded retina, the optic nerve, or the brain itself; on the other hand, it may not be confined to any one, but to a combination of two or all these parts. Amaurosis may vary in extent from a slight degree of dimness of sight to total blindness. The disease is not necessarily attended by

any visible alteration in the appearance of the eye excepting in the sluggishness and sometimes perfect immobility of the pupil. This condition, however, is not invariable ; and, as I shall presently have occasion to show, the action of the pupil is one of the most favourable symptoms the case presents, and this in proportion to its freedom. Whilst, however, total and permanent blindness is not always inconsistent with a moveable state of the iris, a perfectly fixed pupil, on the other hand, presents an almost hopeless condition, as it points, for the most part, to an irrecoverably paralyzed retina, unable even to communicate the impulse of action to the ciliary nerves of the iris. With this sole exception, therefore, I should say that the presence of any other visible alterations in the conditions of the eye, rather proves the affection not to be purely amaurosis, but a mixed form of disease.

So many and various are the causes of amaurosis, so intimate its connexion with the whole field of medical philosophy, so hopeless, in many cases, the condition of the patient, and yet so wonderful, under some circumstances apparently hopeless, are the cures which art or nature has effected, that the subject may be considered, perhaps, as the most interesting in the whole range of ophthalmic medicine. To the poet and the scholar the subject presents another source of interest, from the fact that it was this affection which darkened the eyes of the immortal Milton, whose exquisitely delicate and poetical

desription of his own misfortune may well excite our sympathies for his fellow-sufferers, and arouse our best energies and exertions in their behalf, whilst his example, no less than his precept, most energetically and eloquently pleads to all to lay up that store of materials for inward light which no drop serene can quench, and which so eminently shone forth in him.

“Thee I revisit safe,
 And feel thy sovereign vital lamp ; but thou
 Revisit’st not these eyes, that roll in vain
 To find thy pierceng ray, and find no dawn ;
 So thick a drop serene hath quenehed these orbs,
 Or dim suffusion veil’d. Yet not the more
 Cease I to wander, where the Muses haunt
 Clear spring, or shady grove, or sunny hill,
 Smit with the love of sacred song ; but chief
 Thee, Sion, and the flowery brooks beneath,
 That wash thy hallowed feet, and warbling flow,
 Nightly I visit ; nor sometimes forget
 Those other two equall’d with me in fate
 So were I equall’d with them in renown,
 Blind Thamyris, and blind Maenides ;
 And Tiresias and Phineas, prophets old :
 There feed on thoughts that voluntary move
 Harmonious numbers ; as the wakeful bird
 Sings darkling, and in shadiest covert hid
 Tunes her nocturnal note. Thus with the year
 Seasons return; but not to me returns
 Day or the sweet approach of even or morn,
 Or sight of vernal bloom or summer’s rose,

Or flocks, or herds, or human face divine ;
But cloud instead and ever-during dark
Surrounds me, from the cheerful ways of men
Cut off, and for the book of knowledge fair
Presented with a universal blank
Of Nature's works, to me expung'd and ras'd,
And wisdom at one entrance quite shut out.
So much the rather thou, celestial light
Shine inward, and the mind through all her powers
Irradiate ; there plant eyes—all mist from thence
Purge and disperse."

The symptoms, as well as the appropriate treatment of amaurosis, differ so much according to the especial circumstances under which the affection has made its appearance, that it will be more profitable to occupy our time in the description of a few of those circumstances, than to attempt a more general view of the disease and its method of cure, liable, as such description must necessarily be, to an almost endless number of exceptions.

Various conditions of the brain, such, for example, as tumours within the cranium pressing upon the course of the optic nerves, or on that portion of the brain into which they are inserted, are not unfrequent causes of amaurosis. Such cases are amongst the most hopeless with which we have to contend ; they are generally preceded by a chain of symptoms evidently referrible to some morbid condition of the brain, and the loss of vision commonly succeeds as but one symptom, complicated with others, and

probably with pressure upon other motor or sentient nerves, giving rise to paralysis of some other portions of the frame. Temporary relief, or a more or less permanent arrest of the further progress of the disease, is as much as we can possibly hope to obtain in these cases. The treatment must be regulated according to the circumstances of the case, and the age and habit of the patient; but should never be pushed to the extent of breaking down the general health, which an indiscriminate application of the use of mercurials and the antiphlogistic treatment is too apt to effect. On the contrary, it might fairly be supposed, that even as regards the mischief within the cranium, nature would be most likely to restore it, if possible, or to retard its progress, under the circumstances which made the nearest approach to conditions of good general health; whilst the condition of the retina itself cannot but be rendered worse by measures which only tend to lower and impair its vital powers in common with those of the system at large. If this aspect of things is connected with an enfeebled state of the system, and a strumous diathesis, I have found that an improved diet, with a small allowance of stimulants even, and tonics, especially steel, have been of much service; it must not, however, be supposed that such treatment is to be adopted indiscriminately; an otherwise robust person will require to be lowered, and in many instances of this kind, there is evidence of temporary determination to the head, in which

case, the occasional abstraction of blood by cupping or leeching, the use of brisk saline purgatives, blisters, setons, &c. is often desirable, always taking care that the treatment directed to the disease as a local affection, should not be carried to the extent of injuring the constitution. In these instances the mercurial treatment is worse than useless, and although it is not always easy during life to diagnosticate between this and the succeeding form of the affection, I believe that it is in cases of amaurosis connected with inflammatory action alone, that this plan is attended with advantage; the difficulty of distinction may have occasionally led to the supposition, that it was in these conditions, also, that it has sometimes proved beneficial. The local relief of the cerebral vessels, whether by leeching, cupping, or the permanent drain from blisters or setons, is not always inconsistent with the use of general measures of a supporting and invigorating character; on the contrary, I have often combined these apparently discrepant plans with great advantage to my patient. Dr. Prichard, of Bristol, has lately published some cases apparently of this form of cerebral disease, in which amaurosis constituted a symptom, which he appears to have treated with success, by a process of counter-irritation of an extraordinary severe character—an incision being made through the integuments of the scalp along the whole line of the sagittal suture, and kept open by means of the insertion of peas. I have never had any ex-

perience of the effect of such treatment; but Dr. Priehard's authority is a high one, and the reader will do well to consult his remarks on the subject. The treatment, indeed, appears somewhat rough and severe, but if it should, on further experience, be found to be of tolerably general and essential service, we might well overlook the severity of the practice in the benefit conferred in so lamentable and hopeless a form of disease.

Acting in a manner somewhat similar to the effects of tumours, apoplectic seizure, or mechanical injuries, attended by the rupture of blood-vessels within the cranium, and the effusion of blood, if in such a situation as to cause pressure either on the optic nerves or the part of the brain into which they are immediately inserted, may induce amaurosis;—under these circumstances, the loss of vision will generally constitute but one of many other, and at the same time more important symptoms, so that if the patient be in a completely comatose state, it will be impossible to ascertain how far the powers of vision are affected, which will only be learnt by the practitioner on the partial subsidence of other symptoms. Sometimes, however, paralysis of the optic nerves will be almost the only symptom present, or it may be combined with that of a few other parts, as of the nerves of hearing, the lingual, or some motor nerves, the patient being in a condition to explain his state, and describe with accuracy, the degree of vision of which he is susceptible. Such cases are sud-

den in their accession. The treatment must be directed according to circumstances, and I know of no work, which, although not especially devoted to this subject as regards the affection of the nerves of sight will give the practitioner a clearer or better general insight into these states and their appropriate management, than the admirable lectures of Sir Benjamin Brodie on injuries of the head. The first great object will be to prevent the further effusion of blood, and the next to adopt such measures as will facilitate and promote its absorption. As but few of those cases come under the care of the pure oculist in their earliest stages, it is to the second point of treatment that his attention will be most frequently directed. The circulation should be kept rather below the standard in point of force and frequency, by the use of a mild unstimulating diet, occasional purgatives, &c., the head should be kept cool, and the absorption is often facilitated by a mild mercurial course. The practitioner, however, should at this stage of the affection be careful not to do too much, for the haemorrhage having ceased, nature is of herself usually competent to effect the absorption of the effused blood; in some of these cases, however, this is not the only mischief sustained, the integrity of the nervous structures may have been compromised, and then no treatment can be of service. The amaurotic state may continue long after the removal of all other co-existing symptoms, the powers of the patient having been im-

paired by the effects of the primary injury, and the lowering treatment he has sustained ; a more tonic and stimulating plan should now be adopted with caution, and even at so late a stage, partial or entire recovery will be occasionally witnessed.

Short of extravasation of blood, mere cerebral congestion, or serous effusion may be the cause of amaurosis ; as such cases, however, differ neither in their symptoms or treatment from other states of the same affection in which the optic nerve either does not suffer at all, or suffers in connexion with other parts, it will not be necessary to dwell further upon the subject here. Sufficient information may be obtained from many practical writers, as from the admirable work of Dr. Abercrombie, on the diseases of the brain, and from the published lectures of many eminent practitioners of this metropolis. The plan of treatment adopted, and the extent to which it is carried out, will vary somewhat in proportion to the especial doctrines which have been inculcated in the particular school to which each practitioner has been attached. The best treatment, however, will be that which is less founded upon any preconceived notions than upon the particular circumstances of each case, and above all, the general condition of the patient will deserve the consideration of the practitioner, no less than the degree of urgency of the symptoms. In either case, especially in the latter, I believe that it is easy to carry blood-letting too far. Keep-

ing down the temperature of the head, the occasional administration of brisk cathartics, counter-irritation, and if serous effusion be present, the administration of a mild mercurial course, are amongst the most important means of cure.

Pure inflammation of the retina, I have before stated to be, in my opinion, a comparatively rare disease, nor do I believe that pure inflammation of the nervous substance itself, or of the great central nervous systems, is so common as some may suppose. Inflammatory action, however, commencing in other parts, as in some portions of the eye, in the investing membranes of the brain, or in the sheaths of the nerves or other neighbouring parts, may involve functional or organic injury of these parts, and so become the cause of amaurosis.

Such forms of amaurosis are generally traceable without much difficulty to their origin in inflammatory action ; if this has been seated in the eye itself, other visible alterations may have occurred ; and in any case, the affection will have been found to commence somewhat suddenly, with pain of the globe, temples, or head, and some febrile disturbance of the general health ; exposure, too, to some cause sufficient to induce inflammation, will be remembered, or the symptoms may have actually come on in connexion with mechanical injuries, grave or slight, to the eye or head. The form of inflammation to which such affections are due, may be of the acute or chronic kind, and

if the attention of the oculist be drawn to the ease at an early period, and when there is every evidence of the actual existence and progress of inflammatory action, he will, of course, treat it according to the circumstances of the case, and his general views respecting the treatment of inflammatory affections. It, however, more frequently happens that he is not consulted until such symptoms have subsided, and the patient and his attendant become anxious at finding no improvement, but rather increased diminution of the powers of vision. This circumstance should be well considered, because the period for the application of powerful antiphlogistic treatment has probably already subsided and gone by; nor is this argument less applicable to amaurosis than to many other conditions dependent upon inflammation, which fall under the care of the physician and surgeon.

Some difficulty must be experienced in the management of these affections, from the impossibility of ascertaining, with certainty, what is the nature of those changes to which the loss of vision is due; judging, however, from analogy in other cases, both as to the nature of the deposits thrown out, and the effect of treatment in facilitating their removal, the mercurial treatment gently and carefully persevered in, would appear to offer considerable hope of advantage in many instances, and such is in fact the case; counter-irritation, too, is frequently of the greatest service. For the rest, those measures which are

best calculated to afford tone and vigour to the system generally, and above all, to the vessels of the parts affected, would appear to be the most likely means of promoting the absorption of the effused matters, and restoring a healthy eondition of the parts.

On the other hand, there appears good reason to believe that in some instances the changes occurring from mechanical injury or inflammation, are not simply due to the deposition of matters impeding the function of the retina or nerves, but to various altered conditions in the nutrition of these parts, by no means susceptible of improvement under the influence of mercury or any particular kind of treatment. Counter-irritation, and the use of such measures, whether medicinal or dietetic, as are most calculated to promote the general health, offer the best chance of success under these circumstances. Only a few days before writing this paragraph, I was consulted by a person who was amaurotic, and traced his blindness to a slight mechanical injury done to the eye three years previously. No other structures of the eye were affected; and so slight was the injury, that neither immediately after its occurrenee, nor subsequently, had he experienced any inconvenience, beyond the gradual diminution of sight, to induce him to seek professional assistance. In such a case it is impossible to eonsider that inflammation, (in the ordinary acceptation of the term,) with inflammatory deposition, was the cause of blindness; and such cases are by no means of uncommon oecurrence.

Whatever the changes which have taken place may be, and hopeless as many of these cases may appear, from the lengthened period of their duration, it must prove a source of satisfaction alike to the sufferer as the oculist, to know that the disease will occasionally yield, even at very advanced periods, and that, too, under circumstances the most extraordinary and the least expected. Such results afford great encouragement for persevering in the use of every reasonable measure of treatment, whilst they no less warn us to abstain from the employment of such means as may, by their continued and incautious use, enfeeble the powers of the system, and with it do such injury to the nervous apparatus of vision, as shall render it insusceptible of cure; incapable, the other causes being removed, of receiving or communicating the peculiar impressions of sight. The following case is taken from Mr. Houston's edition of Dr. Littell's work on diseases of the eye; and forms an interesting illustration of the fact I have just been relating, namely, that amaurosis originating in inflammatory action, however hopeless, and of however long standing, may yield under circumstances the least expected. "A patient was admitted into Will's Hospital with rheumatic ophthalmia of the right eye, who, twenty years before, had lost the sight of the left, from a wound inflicted by a particle of metal. The iris had been injured by the accident, and the pupil, approaching to an oval form, had deviated from the centre to the circum-

ference. Previously to his admission he was barely able, with difficulty, to distinguish light from darkness ; but during the inflammation of the other, its vision gradually improved, and was entirely restored by a metastasis of the ophthalmia, which occurred without any obvious cause. When discharged from the house, he was able to see equally well with both eyes." Although I do not remember to have seen any case of chronic and long-standing amaurosis disappear under the establishment of any form of ophthalmia at a subsequent period, yet I have seen many cases of recovery, either spontaneous or under the influence of powerful counter-impressions, whether due to other diseases or medical treatment. The following interesting case, occurring in my own practice, may be taken as an example, although the affection was here rather due to cerebral congestion, probably, than inflammatory action.

Captain F., commanding a troop of cavalry at Hyderabad, in his Highness the Nizam's service, whilst on horseback, was suddenly struck by a coup de soleil. He was conveyed home in a palanquin, and remained some days in a state of almost total insensibility. The most active antiphlogistic treatment was used by his medical attendant; but the sight, which was from the first entirely lost in both eyes, did not return with the gradual subsidence of the other symptoms. Soon after this he was advised to come to Bombay, a distance of three or four

hundred miles, to consult me. He arrived in a most debilitated state, and so entirely blind as not to be able to distinguish light from darkness, not being able to discern the situation of a window, although opened and in the strongest light; although the vacant stare, so peculiarly characteristic of amaurosis, was well marked in this case, yet the iris was obedient to the stimulus of light contracting and dilating, but neither to the same extent nor with the same activity as in health.

He was put upon a steady mercurial treatment, strong stimulating applications were made to the eyes, and frequently repeated blisters to the temples. No benefit arising from this plan of treatment, it was discontinued for a course of tonics, which proved equally unsuccesful. He returned to Hyderabad, and in consequence of his total blindness was obliged to retire from the service.

Having always given it as my opinion, that so long as the mobility of the iris continued, the case ought not to be abandoned as entirely hopeless; at the expiration of a year and a half, Captain F., being again anxious to consult me, came a second time to Bombay. He arrived quite an altered man in appearance, having ridden all the way on a rough-paced elephant. The eyes, however, were in the same state as when I first saw him, and no improvement in vision had occurred. I again repeated the former plan of counter-irritation by blisters, local stimulants, as of electricity, and put him upon a course of quinine, with

generous diet; and, as he was a man of remarkably abstemious habits, I ordered him to take considerably more than his usual allowance of wine. He was also desired to take hard and regular exercise on horse-back, before and after sunset, along the beautiful sands of the Back Bay, and to use cold sea-water shower-baths. During this state of things, I was one morning suddenly called upon to attend him immediately, and found him labouring under severe and well-marked cholera. Under proper remedies he rallied, when, to our mutual satisfaction and surprise, with the subsidence of this formidable malady came a return of sight, which after a few days became almost as perfect as ever. The cure was clearly due to the cholera itself, and not to any remedies prescribed by me for that disease.

AMAUROSIS FROM EXHAUSTION AND—DRAINING OF THE BLOOD.

We now come to speak of an entirely different class of circumstances, as the cause of amaurosis, and that too of no unfrequent occurrence; I allude to debility, exhaustion, and draining of the blood, whether by its direct abstraction by means of mechanical injury; the lancet, or other causes; or to the slower but equally sure process of drainage, arising from deficient supplies, or exhausting discharges or secretions. The exact state of the retina, optic nerves, and brain, under these circumstances, it is

difficult to explain, or why the powers of vision should, of all others, in this particular form of disease be so singularly and prominently affected. That these nervous structures should suffer proportionately with all others in the deficient supply of their vital fluid, and should therefore be proportionately enfeebled in their functions, can be readily understood ; but matters go further, vision is not simply impaired, but frequently entirely lost, whilst the susceptibility to their ordinary impressions of other parts of the nervous system may remain unimpaired. Bearing in mind this particular form of amaurosis, I have always been especially careful in adopting that ultra-antiphlogistic treatment for other forms of the affection, which has been by some so unhesitatingly recommended, and so unflinchingly practised. I have felt disposed to ask myself the question, how far (setting aside the particular condition to which the disease may be due) the continued perseverance in a powerful course of antiphlogistic treatment may render the retina, optic nerves, and brain, incapable of benefiting, by the removal of such condition, even supposing its removal to be within the power of such treatment ? Let me be understood : I mean to say, that supposing gutta serena to be due to the pressure of a tumour, to inflammation, to cerebral congestion, to effusion of blood, serum or lymph ; and supposing, again, that bleeding, purging, starving, calomel, antimony, &c., had the inevitable power of removing such causes, what

benefit would accrue if, in removing them, the nerves of vision become themselves enfeebled and paralysed, incapable of receiving and transmitting their appropriate impressions? If such be even but occasionally the result of this plan of treatment, and considerable experience has convinced me that it is, some useful cautions may be learnt respecting the limits to which such treatment may, with propriety, be carried, even in cases which seem most adapted for it.

How far may amaurosis, supervening upon inflammatory affections or mechanical injuries, be due to the excessive depletory measures with which such affections have been combated? Many years ago a gentleman's servant sustained an injury to one of his eyes by the prick of a thorn in getting over a hedge; the most vigorous antiphlogistic treatment was adopted and sedulously persevered in for many weeks. I am afraid to say how much blood was abstracted generally and locally during this period, in which he was kept also upon gruel and barley water. The integrity of the eye was saved as respected its transparency, owing, as it was supposed, to this vigorous treatment; the propriety of which I am in no position to criticise, not having seen the patient till some years afterwards; but vision was entirely lost. It was long before he regained his wonted health, but he still continued blind with the injured eye, the sight of which he, however, gained some years after the injury.

Not many months since I was consulted in the case of a female, the servant of a respectable practitioner in this town. She had laboured under ptosis of one eyelid. Having consulted an eminent oculist, she was repeatedly cupped, leeched, blistered, purged, and otherwise lowered. The ptosis remained stationary ; and in addition to this affection she had become amaurotic.

Amongst the more frequent causes of this form of disease are extreme losses of blood, as by haemorrhoids, uterine haemorrhage, mechanical injuries, &c., the debility induced by acute and wasting illness, as fevers, &c., low and impoverished diet, exhausting discharges, as leucorrhœa. Undue lactation is not an unfrequent cause of amaurosis. A lady, the wife of one of the principal merchants of Bombay, after several confinements, was always attacked with blindness, which subsided when she ceased to nurse. Not long since I was consulted by a gentleman labouring under amaurosis, who traced his disease to the baneful influence of excessive masturbation. The more temporary influence of depressing causes, and of exhaustion from loss of blood in impairing the powers of vision, is familiar to all practitioners in the phenomena of fainting ; in excessive menorrhagia, or uterine haemorrhage, this effect is frequently observed. The same conditions of this function have been ably described by my kind and lamented friend Dr. Gooch, in his Essay on the Symptoms in Children, erroneously at-

tributed to congestion of the brain. Dr. Marshall Hall, too, has ably drawn attention to the same subject. And here are cases, not of amaurosis simply, it is true, but in which amaurosis exists as an important feature and symptom, really due to exhaustion, and yet previously attributed to, nay, supposed to constitute the main characteristic of, congestion of the brain, and therefore the great indication for further exhaustion by the lancet or the leech.

It need hardly be said that the first object of treatment in these cases is to remove, if possible, the exhausting and depressing influences, and gradually and carefully to improve the general health. The digestive organs will require especial attention, inasmuch as it is upon them that we must depend for the due conversion into new and healthy blood of the food which is taken. Local stimulation may also prove of some service.

As nearest allied to these causes of amaurosis may be cited, states of general health, short of positive exhaustion, but yet enfeebled. Impoverished conditions, in fact, of the blood. That the addition of some principles to the blood may induce permanent or temporary amaurosis, is seen in the effects of some poisons, more particularly the deadly nightshade, henbane, opium, &c.; whilst its deficiency in some principles may either in itself be sufficient to induce the disease, or favour its establishment under slight exciting causes; this is seen in stages of

debility ensuing on other diseases, in the instances of cachexia, chlorosis, serofula, &c.

An interesting case occurred to me some years ago. A clergyman in the west of England, of about thirty years of age, having been for some time out of health, was called out late one winter's evening, in consequence of the murder of a friend in his immediate neighbourhood. His feelings were, of course, greatly excited by the circumstance, and he was engaged the whole night in investigations respecting the murder, the greater part of which time was spent in the open air, in a continued rain. The effect was not only to increase the disturbance of his general health, but he became almost entirely amaurotic with one eye, being unable to read even a single letter of ordinary print. Under a tonic and invigorating plan of treatment, combined with great attention to his digestive organs, the gentleman has quite recovered, and is now, after the lapse of ten or twelve years, capable of reading, and every other exercise of the organ.

AMAUROSIS FROM MORBID IMPRESSIONS MADE UPON THE NERVES OF VISION,—DIRECT—OR INDIRECT.

Another class of amaurotic cases appears due to morbid impressions made upon the nerves of vision themselves, whether applied directly to them, or primarily to other parts, and affecting them secondarily. As somewhat intermediate between this and the former affection, may be

cited the influence of excessive grief, which, whilst it produces especial influence over the brain and some portions of the eye, as in profuse crying, tends as much as anything to lower and impair the general health. Indeed the influence of all those causes which effect amaurosis through nervous impressions, is greatly augmented and facilitated by their conjunction with other causes of a more general character which are detrimental to the general health.

Amongst the causes acting directly upon the nerves of vision may be cited excessive fatigue of the organ, especially in regarding very minute objects, reading of small prints, whether under too strong or an insufficient light. Artificers engaged in the manufacture of very minute articles, great readers, minute microscopic investigators, &c., are especially liable to suffer from this form of amaurosis, and their liability is further increased by all causes tending to impair or disturb their general health. Sudden vicissitudes of light are liable to induce paralysis of the retina, the more temporary effect of which is known to everybody who has suddenly gone from a dark room or cellar into the bright sunshine, or vice versa. The tyrant Dionysius was aware of this fact, and took advantage of it to glut his wicked and tyrannical passions. He was in the habit of confining state prisoners for a certain period to a dark cave, which still, indeed, bears his name. He then caused them suddenly

to be exposed to the meridian sun, the effect of which was perfect blindness. When at Syracuse I visited this cave, and I can readily imagine the effect of such a proceeding, particularly upon prisoners who had probably been long kept on a debilitating diet.

Many curious cases are on record, and many have occurred to myself, in which amaurosis has been dependent upon morbid impressions made upon parts far distant from the eye; nor is this more than is seen in other instances in medical and surgical practice, as may at once be evinced in the numerous morbid conditions due to the irritation of teething for example. Amongst the most common causes of this form of amaurosis are morbid conditions of the uterus and alimentary canal, parts in the derangement of which we find the widest and most extensive field of morbid sympathetic actions. Every one is acquainted with the effects of ordinary bilious attacks, and constipation, on the organs of vision, and the frequent occurrence, under these circumstances, of dark floating specks, (*muscae volitantes*,) flashes of light, &c. I remember attending a Parsee child, who had been perfectly amaurotic for six weeks, and who passed thirty-seven large worms, (*lumbrici*,) after which he speedily recovered.

What are the precise conditions of the nervous structures under these circumstances is unknown, and must probably be ever left to conjecture; experience is, how-

ever, a sufficiently safe guide to their proper treatment. Common sense would at once dictate the propriety of removing, as far as possible, the causes of the affection, whether acting directly upon the nerves of vision, or indirectly through other parts of the nervous system. Laborious and trying exercise of the eye should therefore from the earliest symptoms be desisted from ; very strong light should be guarded against, and all exertions of the eye under a light too feeble for the purposes of distinct vision. Distant sources of irritation should be sought for, and corrected or removed. Next to this, inasmuch as all causes of general debility are especially favourable to the establishment and permanent increase of the malady ; such states of constitution should be guarded against, or removed, by the judicious administration of appropriate diet, exercise, &c. The patient, if an inhabitant of a dense and crowded city, or of a low and relaxing district in the country, will derive great benefit from the change to a fine, dry situation, and above all, to the sea-side. Tonics should be administered according to the circumstances of the case, and stimulants, as wine, or malt liquor, according to the age and previous habits of the patient. The head should be kept free from excitement, and cool. The cold water dash to the whole face and forehead three or four times a day, particularly after any exertion of the organ, is a point of treatment I would most strongly urge. The comfort,

too, that it affords the patient, will soon induce him not to neglect this powerfully remedial, though simple, measure.

USE OF STRYCHNIA.

Some local stimulus to the eye, as the vapour of æther, the passing the electric spark through the temples, &c., may be found useful ; but the stimulating remedy which has been found most beneficial in many forms of paralysis of the nerves of vision, and in these cases more particularly, is strychnia. The strychnia, or nux vomica, it is well known, is so powerful and deadly a poison, that it is hardly necessary to say that its use, whether externally or internally, requires the utmost care and caution on the part of the practitioner ; with this care I have never, however, seen it occasion serious mischief, either in the hands of myself or any other practitioner. The annals of medicine are not, however, without records of its disastrous effects when such care has not been taken.

Strychnia is the alkaloid base of the nux vomica ; and although much more concentrated and powerful than that substance itself, like many other of the modern salts, possesses the advantage of being much more uniform in strength, and for that and many other reasons, more conveniently applicable in practice ; it may be given internally in the dose of a twelfth of a grain two or three times a day. Externally it may be used, suspended in

some unctuous substance, whether ointment or liniment, and rubbed into the temples; but a better and far more certain and uniform mode of proceeding consists in the application of a very small blister to the temple; after taking off the blister the raised cuticle is to be removed by a pair of scissors, and the powdered strychnia is to be sprinkled on the denuded surface, beginning with from one sixth to one quarter of a grain, and gradually increasing the quantity to a grain, or grain and a half, until either the first indication of constitutional symptoms, or improvement of vision, render it desirable to discontinue, or unnecessary to prolong its use. The powder being sprinkled over the denuded surface, it may then be protected from the air by a piece of lint or linen smeared over with some simple ointment. This, indeed, is by far the best and most convenient mode of using this substance; but even under these circumstances, when this medicine is directly absorbed by the skin, its constitutional effects are often speedily induced, and we should look carefully to the first symptoms of muscular twitchings and spasm, to leave it off for a time, and then again, if necessary, renew its application.

PARALYSIS OF PORTIONS OF THE RETINA.

Amaurosis is not unfrequently partial in this respect, that one portion only of the retina is paralysed; this is evidenced by the fact that persons can only see objects

in a particular direction, in which the impression of their image is made to fall upon a part of the retina which is not diseased ; such persons suffer great annoyance from the presence of a permanent dark spot in their field of vision ; there may be one such spot, or there may be more. The treatment of this affection, and the probabilities of its success, are precisely parallel with the analogous cases of entire or general amaurosis. The disease is one of much importance, because it is liable, under careless management, and sometimes even under the best, to spread over the retina, and induce paralysis of its entire structure. The causes which most frequently induce it, are intense exertion of the eye upon minute subjects of investigation, or the long and continued application of too strong a light. The temporary effects of such causes may have been experienced by many of my readers, who, having minutely regarded objects through a microscope, or having looked at a very brilliant light, or a powerful lamp, a bright fire, or, above all, the sun, have, on taking their eyes off such objects, experienced difficulty of vision, and complained that great dark specks appeared before their eyes.

Some years ago I was consulted by an officer of the Bengal army, who had been suffering for many months from this affection to a most distressing degree. The cause of his malady originated in his having kept his eyes inadvertently fixed on an eclipse of the sun whilst

travelling outside a stage coach, without any screen before them. I have within the last month seen this gentleman, and find the dark speck remains, and has increased in size.

MUSCÆ VOLITANTES.

With the movements of the globe of the eye these dark specks appear to move also, and they have frequently received the appellation of muscæ volitantes. The consideration of this subject leads us almost imperceptibly to that of muscæ volitantes, properly so called ; but I must insist upon a difference of considerable importance between the extremes of these affections, although in practice many cases present themselves, occupying a mid position between them. In the case of paralysis of a portion of the retina, the dark spot is permanent, and only appears to alter its position, because the eye itself is moved, just as when travelling at a great rate, the surrounding trees and hedges, which are really stationary, appear to be in motion. The affection is permanent, and during its existence, though varying one day with another in intensity, is rarely if ever entirely absent ; but what is still more important is the tendency of this affection to terminate in entire amaurosis. Muscæ volitantes, properly so speaking, although temporarily occasioned by intense exertion of the eye, not unfrequently occur without any such cause ; the patient may be extremely annoy-

ed by muscæ volitantes one day, and nearly or entirely free from the annoyance another. The affection is generally traceable to conditions of general health, as constipation, indigestion, bilious attacks, &c., and unconnected with particular exertion of the organs of vision ; and, indeed, is commonly and frequently present during the incipient stages, or even the whole period of febrile and other constitutional disorders. In some of the most inveterate cases, these muscæ volitantes assume all kinds of fancied shapes and forms, as of flies, insects, the web of the spider or gossamer. In several instances, the patient has described them to me as resembling a snake coiled up in many folds ; and one patient, a clever draughtsman, first consulted me by letter, in which he gave an admirable sketch of the little reptile that was constantly haunting him. It is often difficult to persuade the patient that some positive object is not existing in the eye, living or not, which might be removed by operation. Indeed some professional persons have been disposed to attribute these affections to particles floating in the aqueous humour or slight opacities of the cornea ; there seems, however, no good reason for adopting this notion, which is purely hypothetical. These symptoms are comparatively less formidable in their risk to the retina when occurring to young persons, and simply connected with derangement of the digestive organs, than when occurring at the middle or past the middle period of life, and in

connexion with over fatigue of the organ itself. It is in these cases, especially, that the greatest difficulty is found in distinguishing ordinary muscæ volitantes from partial paralysis of the retina. A gentleman of sedentary habits, and who had been many years occupied in pursuits which required the constant application of his eyes to the investigation of minute objects, and the use of the microscope, consulted me some years ago under these circumstances, and in his case the affection assumed the aspect of a winged insect. He could hardly be persuaded but that some living thing was actually floating about in the aqueous humour, and his existence was really rendered miserable by this constant annoyance. Finding that he had not only tried his eyes beyond all endurance, but that his habits of application had led to a confirmed state of dyspepsia; and as the eyes presented no further appearance of disease, I prescribed for him alteratives and aperients, tonics, and a properly regulated diet—urged his giving up, or at least taking a temporary relaxation from his usual pursuits, and making a long journey of pleasure and recreation. This plan was quite successful, and he sometime afterwards wrote to me that he had parted company with his troublesome companion amongst the Pyrenees. I need hardly say that his general health had undergone an improvement commensurate with that of the state of his eyes.

It has been observed of amaurosis, that it may be tran-

sitory ; that is to say, that some influences, such as fainting, or occasionally a very strong light, will produce a temporary state of complete amaurosis, from which the patient may speedily and completely recover ; the frequent repetition, however, of the same cause, and in the same degree, may leave the sufferer partially or entirely bereaved of vision. In the case of worms, or other sources of irritation in the digestive organs, the patient may become completely amaurotic, and yet nature may occasionally effect its own cure by the removal of the sources of irritation. We have now, however, to consider a more curious form of temporary amaurosis which consists in a partial or total obliteration of vision during the day or night. These affections have received the learned appellations, under Greek derivations, of hemeralopia and nyctalopia, terms which have been so variously and confusedly applied by different authors, that one is constantly in the dilemma of not understanding to which of these affections reference is made.

NYCTALOPIA, OR DAY-BLINDNESS.

Nyctalopia, properly signifying night-vision, and therefore implying day-blindness, is by no means a common affection. It is well known, and has been already stated, that under certain circumstances, vision is most distinct when the pupil is most dilated, as in the case of opacities, whether of the lens or cornea ; un-

der these circumstances, however, it is not the retina which is in fault, the more dilated state of the pupil allows of a greater number of rays of light to enter the eye, and it may happen, also, that the circumference of the dilated pupil receives more light, the opacity being greater at the centre than at the circumference. Such patients, if not labouring under day-blindness, at least see better in a subdued light. In strumous ophthalmia, however, besides that a strong light gives the patient much pain and inconvenience, it really precludes the possibility almost of seeing, and yet in the dusk or twilight the little patient walks about using his eyes with ease and facility. I believe day-blindness to be due to a state of retina analogous to that which exists in strumous ophthalmia, excepting that the morbid conditions are in this case confined to the retina, or nearly so, and do not affect the other structures. The retina is in an irritable state, and unable to support the ordinary stimulus of light. Another reason which induces me to draw the conclusion that the retina is the only structure affected, is that in day-blindness, properly so called, I have not observed much pain as a prominent symptom, which does, however, occur in strumous ophthalmia, and, as I believe, for the reasons stated in the description of that affection. Now the retina is a nerve of especial sense, and not capable of experiencing those impressions of ordinary sensation by which pain is recognised. A sharp blow on the

eye gives pain from the injury inflicted upon the ordinary nerves ; but what are its effects upon the retina itself ? Why, not pain but light is perceived ? Any one who in a very dark night has had the misfortune to experience a sharpish blow on the eye or its immediate neighbourhood, knows very well that the blow is immediately attended by a flash of light.

HEMERALOPIA, OR NIGHT BLINDNESS.

Hemeralopia, day-vision, or night-blindness, is a far more common affection than the former, and is most frequently observed in tropical climates, or at least in situations in which persons are exposed to an inordinately powerful light ; it consequently occurs not unfrequently in districts where the atmosphere is clear and the surrounding country covered with snow, the shortness of the days, which in this country, at least, is the usual attendant with these circumstances, and the bracing and invigorating effects of the air, are, perhaps, the chief reasons which render this affection so uncommon in England. Exhaustion of the retina by the continual application of too strong a light, is, I believe, the explanation of this disease ; and although it is rarely if ever witnessed in this country in its pure form, yet a near approach to it is observed in those persons, who having long and severely exercised their eyes during the day, begin to complain that they cannot see well, or so well as they used to do by candle

light or in the night. The constant observation is, "Oh, I am beginning to get old—I cannot read or see of an evening as I used to do ;" or the person thus affected is less able to find their way about at night or in the dark. Persons who have occasion to ride or drive much during the night, frequently experience this inconvenience at a certain age. The fact is, that it is seldom the age only of the patient but his habits of life, both as regards his general health and the exercise of the eyes, or the state of his constitution, to which this enfeebled degree of vision is due. In the districts in which this affection is most prevalent, all circumstances tending to lower the powers of the system, and with it to enfeeble the organs of vision in particular, constitute a powerful predisposing cause of the disease. I have known a whole ship's company affected by night-blindness in various degrees, from slight to total loss of vision, from living for some time on unwholesome rice ;* and I have also known it to affect persons who have exposed themselves, by sleeping on deck, to the glare of a full moon.

Neither of these affections can be regarded as trivial. Of the two, day-blindness, fortunately the least frequent, is

* During the Burmese war much was said or written with respect to rice giving rise to this affection amongst the troops ; and doubtless it does in many instances, not however, from any specific effects upon the organs of vision ; but from the general morbid influence of this article of diet when of inferior quality.

for the most part much more formidable ; in both cases, however, there is but a slight barrier between temporary and total blindness ; between these affections, in fact, and amaurosis. It is easy to say, that affections are merely functional, which frequently admit of cure, or in which we are unable to trace the organic changes which occur ; such functional derangements must, however, frequently be regarded as but the first of a series of structural changes which may end in an entire destruction of the parts affected. Neither of these diseases can be regarded as inflammatory, and neither of them, so far as my experience goes, require to be treated upon antiphlogistic principles, unless complicated by other conditions. In the case of day-blindness, indeed, the irritable state of the retina may sometimes be relieved by the use of leeches or cupping ; but an active purgative is generally more effective in allaying the irritability of the retina, and may be followed up by the application of a blister to the nape of the neck. I have generally treated this affection upon much the same plan as strumous ophthalmia. Night blindness being, as it generally is, due to over exertion of the eyes during the day, or exposure to undue light, combined with depressing influences upon the system, for the most part requires us to spare as much as possible these organs during the day, to set the digestive functions to rights, and from the first to administer a good and nutritious diet, with such tonics as may best facilitate its digestion and assimilation.

CHAPTER VII.

CATARACT—GENERAL OBSERVATIONS UPON—THE STRUCTURE OF THE LENS
 —SEAT OF THE DISEASE—GENERAL DESCRIPTION OF ITS SYMPTOMS AND
 DIAGNOSIS—LENTICULAR, HARD AND SOFT—CAPSULAR—CAPSULO-LENTICU-
 LAR—PROXIMATE CAUSE OF—EFFECTS OF CONSTITUTIONAL TREATMENT IN—
 PREVENTING, ARRESTING, OR CURING—SPONTANEOUS CURE OF—COMPLICA-
 TIONS AFFECTING THE MODE OR PROPRIETY OF OPERATING—MODES OF
 OPERATING FOR—EXTRACTION—COUCHING, DEPRESSION, RECLINATION—
 SOLUTION—MIXED OPERATION ADVOCATED BY THE AUTHOR—TREAT-
 MENT TO BE ADOPTED PREVIOUSLY TO OPERATING—CONSIDERATION OF
 THE RISKS OF INFLAMMATION—THE NATURE OF THE OPERATION, WITH
 THE DIFFERENT SUBSEQUENT DEMANDS OF EACH UPON THE RESTORATIVE
 POWERS—BLOOD-LETTING—OPIATES—TONICS—APERIENTS, &c.—TREAT-
 MENT TO BE ADOPTED AFTER THE OPERATION—COMPARATIVE MERITS OF
 THE VARIOUS FORMS OF OPERATING, EXTRACTION, COUCHING, AND SOLU-
 TION—COMPARISON OF THESE MODES WITH THE AUTHOR'S OPERATION—
 CATARACT AS OCCURRING IN THE EXTREME OF OLD AGE—IN THE EX-
 TREME OF YOUTH—CONGENITAL CATARACT.

THE crystalline lens is, as its name implies, of crystal-line transparency, placed in the anterior chamber of the eye, partially surrounded by the aqueous humour, but posteriorly attached by its capsule to the vitreous humour. Opacity of this beautifully transparent structure consti-

tutes that form of disease called cataract. Many a child has played with the little round ball which is found in the centre of the fish's eye at the dinner-table, without knowing, and perhaps without being informed by those about him, that the object which was affording him so much amusement was the crystalline lens of one of the quickest-sighted creatures of God's creation ; that in life the lens was clear as crystal, and that the milky, turbid appearance it has assumed, from the effects of heat in cooking, have converted it, we may literally say, into cataract.

The crystalline lens has an outer investing membrane, known by the name of the capsule of the lens, a membrane perfectly transparent in the healthy condition of the part ; a limpid and clear fluid, within this membrane, separates it from the lens itself, whose structure, although perfectly transparent, consists of numerous layers placed one upon the other, as is also seen in the rough dissection of the child who delights in breaking off the alternate layers of the hardened and coagulated lens of the fish's eye, until he has reduced it to the smallest globule.

This form of structure of the lens requires to be borne in mind, because in cataract the opacity may occupy different portions of the organ. If the capsule only be opaque, the disease is termed capsular cataract ; if the opacity be confined to the lens, then it is called lenticular cataract ; whilst, when both these structures are simultaneously affected, the form of disease is called capsulo-

lenticular cataract. Other varieties of cataract will be briefly described in the course of this chapter; for the present it is sufficient to remark, that the limpid fluid already described, as being situated between the capsule and the lens, and which is called the liquor Morgagni, is sometimes said to be opaque, giving rise to all the symptoms, appearances, and inconveniences of cataract. Like the aqueous humour, however, this fluid can only owe its morbid conditions to the textures from which it is secreted; and although its being turbid does not, perhaps, necessarily imply an opaque condition of the lens or capsule, it proves a morbid state of those parts, which will probably soon become opaque; the distinction, however, is worth little or nothing in a practical point of view, and therefore the less the student in ophthalmic medicine worries himself about it the better; such distinctions rather tend to create confusion than to give any increased precision to diagnosis or practice.

Before describing the peculiar characteristics of each separate form of cataract, it may be well to take a cursory view of the general symptoms and appearances of this form of disease, as distinguishing it from other affections of the eye; for, although in the advanced stages of cataract, there is little risk of mistaking the disease, at least on the part of an experienced oculist, such mistake might be most disastrous; whilst in the earlier stages the diagnosis is less easy, and a mistake may lead to that indis-

criminate application of the antiphlogistic treatment which I have already felt it my duty to condemn; and which I do not hesitate to say, that I believe, in ninety-nine cases out of every hundred of incipient cataract, only tends to accelerate those morbid changes in the lens which must render an operation more speedily necessary, to say nothing of its effects in impairing the tone and vigour of the other structures of the eye, on whose integrity the success of such operations must depend.

The diseases with which cataract is most likely to be confounded, whether in its earlier or latter stages, are glaucoma and amaurosis. The history of the affections, from the earliest stage of their commencement, the symptoms, but above all the examination of the eye itself, are the sources from which we are to obtain our diagnosis.

With the exception of its occasional origin in mechanical injury, cataract is rarely preceded, or even accompanied, by any symptoms, local or general, which have been sufficiently marked as to draw to them the attention of the patient, excepting, of course, the impediment to vision, whilst glaucoma, as has been already stated, not unfrequently commences with some symptoms of inflammation, as pain of the eyes and temples; and amaurosis, as has been before shown, is not only often attended in its commencement by symptoms of a striking character, but is frequently tracable to very evident causes

directly influencing the retina, or some portions of the optic nerve. It must, however, be confessed, that all three diseases are liable to commence in a most insidious manner, and that the patients are frequently unable to refer their complaint to any very palpable or evident cause.

The symptoms of cataract present, in the main, many marked distinctions from those of amaurosis or glaucoma. In cataract, the first symptom remarked by the patient is a dimness of sight, which is attributed to cloudiness or smoky mist floating before the eyes; and luminous bodies especially, as the flame of a candle, are seen with a misty halo around them, or one candle having the appearance of a double wick. In reading, also, there is generally much confusion, one letter running into another, with a difficulty of tracing the lines. This state of things gradually increases up to the point of total blindness. Now in glaucoma vision is rather enfeebled than clouded, and in amaurosis the enfeebled vision is frequently also accompanied by flashes of light, and the appearance of dark specks or *muscae volitantes*. On careful inquiry, the patient labouring under cataract will generally be found to see best in a rather subdued light, and with his back, better than with his face turned to the window; whilst in amaurosis and glaucoma, the stronger the light, the better, generally, the powers of vision. By the same rule, the artificial dilatation of the pupil with belladonna greatly improves the powers of vision even in advanced stages of

cataraet. In this disease, too, the pupil is commonly as moveable as in health; whilst in amaurosis and glaucoma it is for the most part sluggish or almost immoveable. Amaurosis, moreover, is attended with a peculiar vacant stare, whieh almost at first sight announces the form of the disease to the experienced oculist.

It must be eonfessed, that the diagnostic marks which distinguish these affections are least distinct, the earlier the period at which the examination of the eye is made. Combined, however, with a comparison of the history and symptoms of the affection, we can rarely be mistaken as to its true nature. Such examinations will be much facilitated, and rendered more decided, by the artificial dilatation of the pupil with belladonna and the use of a powerful magnifying glass. Amaurosis is not necessarily attended, during any period of its existence, with any opacity of the deeper structures of the eye; whilst in glaucoma such appearance is very slight in the earlier stages. It is moreover deeply seated, and usually different in colour from the opacity of cataract. In glaucoma, in fact, the altered appearance of the eye can scarcely be said, in most instances, to present an opacity, but rather the appearance as of a concave shining plate at the bottom of the eye itself, reflecting the rays of light; whilst in all forms of cataract there is a dead cloudy body not reflecting but absorbing the rays of light, that too usually convex, and always situated in the anterior portion of the

eye ; the difference of position, too, of these appearances is such, that whilst in glaucoma it is only visible when we look directly through the pupil upon the deeper structures, in cataract the opacity is often perceptible, even when the eye is inspected obliquely and at a considerable angle. In cataract, too, it must be remembered, that the indistinctness of vision is in exact proportion to the degree of opacity of the lens ; whereas in glaucoma and amaurosis the diminution of vision frequently proceeds in a degree entirely disproportionate to any visible alteration in the transparency or other characters of the organ.

DIFFERENT FORMS OF CATARACT.

Some perceptible differences are observed in the various forms of cataract, which will, in some instances, tend to facilitate, in others, to embarrass the diagnosis between this and other affections.

Lenticular cataract may be hard or soft. The hard form is that which most frequently occurs at advanced periods of life. The appearance which this form of disease assumes, is that of a greyish opacity, the central portion being of a yellowish or even brown colour ; and the deeper this tint, and the larger the space it occupies, the harder is the cataract. In this form of disease the lens is rather diminished than not in size. In the soft cataract the lens is somewhat increased in size, so as to appear more than ordinarily prominent, and even occasionally by

its bulk presses forward the free edge of the iris, and impedes its movements. These soft cataracts present a greyish, and often a completely milky appearance. They are soft throughout, and often as fluid as milk itself. There is every variety between the extreme degrees of firmness of the hard, and of fluidity of the soft forms of cataract. Many authors speak of the bony hardness of some forms of cataract, or even of the conversion of the lens into bone itself. The latter case must indeed be very rare; at least I cannot say that I have ever witnessed such an affection; and the term bony, as merely designating the degree of hardness, must be considered, with some few exceptions, an exaggeration. It must not be forgotten that the lens, when extracted and kept, even for a short period of time in spirit, undergoes certain changes, of which increased hardness is one of the most characteristic. It is sufficient, however, for practical purposes, to know that the harder forms of cataract are too firm to admit of being cured by means of the operation for solution, as ordinarily performed in the case of soft cataract; and that the degree of hardness is made sufficiently evident by the peculiarities of colour and appearance of the lens itself. There is, however, a mixed variety in which the central portion or nucleus of the lens is extremely hard, whilst the outer surrounding parts are soft, sometimes even to a degree of fluidity.

Opacity of the capsule constituting capsular cataract,

frequently occupies one portion of the capsule only; if the anterior portion be the part affected, the opacity assumes a silvery or pearly whiteness, and is often observed to be streaked with alternate lines of a white opaque glistening character, and others of a more clear and transparent nature; the convexity of the lens, and the fact of its anterior surface being nearly on a level with the edge of the iris, affords another marked peculiarity. Should the opacity, however, commence in the posterior part of the capsule, the depth of its situation and the concavity of its form, will render it somewhat difficult in its earlier stages to diagnosticate this form of cataract from glaucoma. The turbid and streaky aspect of the opaque capsule, as well as the history and symptoms of the different affections, will generally, however, afford sufficient evidence on which to found an unerring diagnosis. It must also be remembered, that in cataract, as in all other affections affording ocular demonstration of their existence, the constant habit of inspection acquired by an oculist of extensive practice, will enable him to detect almost at a glance various forms of disease, which it costs the tyro much pains to distinguish by the aid of rule rather, than experience.

In capsulo-lenticular cataract, the opacity may have commenced with the capsule, and thence extended to the lens, or vice versa; or both structures may have been simultaneously affected from the first. In this variety

of the disease the lens itself is often soft, and the cataract is consequently very large. This form of the affection is evidenced by the silver streaks of the anterior convex surface of the capsule and the opaque lens being seen through the interstices, different in colour and appearance.

Several other forms of cataract are described by some writers, especially those of the German school; but as these distinctions are rather matters of curiosity than practical utility, it will not be necessary to dwell upon them.

PROXIMATE CAUSE OF CATARACT.

As to the proximate cause of cataract, the subject appears to be surrounded by great difficulties, no one having as yet given a satisfactory explanation of this subject. The investigation is not, however, without interest, and when carried further may probably, at some future period of time, be attended with important practical results. If I were permitted to throw out a conjecture as to the proximate cause of cataract, I should say that it must be sought for in the deviation of those laws and minute phenomena connected with the subject of nutrition,—laws and phenomena which, although but parts of one great and comprehensive system, vary materially in their detail, according to the various parts and tissues in which they are carried out. To some persons this notion may, perhaps, appear vague; but it

must be remembered that I am not attempting to give an exact explanation of the mode of the formation of cataract, but simply to point out the direction in which that explanation is to be sought for. The subject must necessarily be one of considerable difficulty, when it is considered that the study of growth and nutrition generally is but in its infancy; and if many difficulties are found to surround this study, in parts whose vessels are large and carrying red blood, the difficulty will perhaps, though not necessarily, be increased in the study of the transparent structures, whose vessels elude our research, and are too minute, under ordinary circumstances at least, to carry the red globules of the blood. Nor let it be supposed that the proximate cause is not one and the same, because the remote causes are various. This is no more than happens in numerous other instances; and indeed the uniformity of the effect might, on the other hand, be held as an argument in favour of the uniformity of the original cause. In the same direction, I believe, must be sought for the proximate cause of many other affections of the eye, as the morbid conditions of the retina, vitreous humour, choroid coat, &c., in some cases of amaurosis and glaucoma. I am the more anxious to insist upon this, because a tendency, as it appears to me of much practical mischief, has long existed, and is only now slightly on the decline, to consider almost all organic changes as the result of

inflammatory action ; hence the incipient stages of many diseases have been combated with a so-called "bold" antiphlogistic treatment, and a reckless disregard for the powers and resources of Nature herself.

The many alterations which occur in other structures not very dissimilar to those of the crystalline in cataract, as the result of inflammation, would appear to lend some plausibility to the idea, that this process is the assignable cause of the disease, which would receive further force from the fact, that cataract not very unfrequently makes its first appearance under the influence of inflammation of some portions of the eye, whether originating in mechanical injury, or other causes ; but this supposition is no longer tenable, when we reflect that the cataract more often appears long after all other traces of inflammation have subsided than during their presence, and when resulting from mechanical injury, has sometimes made its appearance without any evidence of inflammatory action, and that too, at considerable periods after the infliction of the injury. It may readily be conceived how mechanical injury or acute inflammation of any parts of the eye, may leave behind them conditions of the minuter vessels, greatly impairing the nutrition of all parts, but more especially of a part so peculiarly situated in this respect as the crystalline lens.

Nor is it simply from the length of time which frequently elapses between the infliction of an injury and

the establishment of cataract, that one is led to infer that inflammation is not the process by which it is formed ; it frequently happens in these cases that the immediate formation of cataract is connected with great constitutional states. The following is one of many such instances which I have witnessed. Lieut.-Colonel S., of the 3rd Bombay Cavalry, received a blow over the eye from a tennis ball ; not until seven years after this accident was he afflicted with cataract in this eye, and that, too, when labouring under a severe attack of rheumatism, and otherwise suffering much in his general health. I might further add, that it is now nearly twelve years since I performed upon Colonel S., the operation which I shall presently have to recommend to the notice of the profession, and that I had the pleasure of seeing him only a few days ago, when I found that the operation had been as lasting, as it had been successful.

Let us observe the other circumstances generally admitted to be most frequently connected with the origin of cataract, and we shall find them, for the most part, to be of a nature either affecting the whole system of nutrition or its process in the eye especially, through the medium of its blood-vessels. Under the first head come derangements of the general health, whether in the more common acceptation of this term, or as connected with positive states of disease by which it is impaired ; then, although cataract may affect persons of all ages, it is by

far the most common at advanced periods of life, when these functions are, in common with many others, most impaired ; it is also not very unfrequent at very early periods of life, and even, it is said, during the state of foetal existence. Under the second head come the causes already enumerated, as mechanical injuries, and various forms of ophthalmia, over exertion of the eyes, frequent exposure to glaring light, occupations which tend to cause what is commonly termed determination of blood to the head, and which, in other words, means disturbance of the natural conditions of the circulation in these parts. In further confirmation of this view, it may be stated, that whilst the majority of cases of cataract forming in adult life are traceable to some palpable cause local or general, by far the greater number of them, for which no such palpable causes can be assigned, occur to elderly persons, the congenital cataract occurring also, for the most part, without any palpably assignable cause.

EFFECTS OF CONSTITUTIONAL TREATMENT IN PREVENTING,
ARRESTING, OR CURING.

With these views respecting the formation of cataract, which have been much confirmed by practical experience, it will not be a matter of surprise that I do not exactly accord with the great majority of practical oculists respecting their very decided views of the treatment of this affection. The following expression, which is quoted from

the work of an eminent and experienced American oculist, may be fairly taken as expressing the general opinion on this subject. "The expectation of arresting the progress of cataract, or, after opacity has taken place, of restoring the transparency of the tissues by medical treatment, has been, in this country at least, altogether abandoned." In stating my partial dissent from this generally received opinion, let it not be supposed that I have much to offer to the profession or the public; I have no pill or draught to be taken three times a day; no drop or vapour to apply to the eye, by which I can promise to cure cataract once formed, or to arrest its formation; but I do say that it is not beyond the pale of possibility, that under the assistance of art, properly directed, nature may repair her own error, and that if she can rarely be made to undo what she has done wrong, she may at least be courted into doing wrong no longer.

It is hardly to be expected that in cases of confirmed cataract of long standing, we should by any treatment, whether general or local, be able to restore the lens and its capsule to their former transparency, or even materially to lessen the degree of opacity;* in such cases, there-

* I find, however, that homœopathy, which has already conferred so many blessings on humanity, does not even shrink from this arduous task. A lady of rank, a patient of mine, labouring under hard cataract of one eye, came under the care of one of these homœopathic professors some years ago, who

fore, an operation is the only resource by which the patient can be restored to the blessings of sight; unfortunately it is at this period that the oculist is most frequently consulted, and that too, (unless the disease had its first cause in some palpable and irreparable injury to the lens through the medium of its surrounding textures,) in the case of persons far advanced in years; but I feel confident, that if consulted in the earlier stages of the disease the oculist might frequently, under favourable circumstances succeed, if not in removing, at least in greatly retarding or even arresting the further progress of the affection. I believe that at one period the too prevalent habit of studying diseases in respect of their local character, rather than their constitutional relations, has led to the adoption of that very class of remedies in the treatment of cataract, which were rather calculated to do harm than good; hence the general opinion that the disease is beyond the influence of all remedies, is true in respect of those which have been most frequently tried. For the very agents employed have been those most likely to im-

promised her ladyship a certain cure. No improvement, has, however, as yet taken place. It is deserving of remark, that in this as well as many other cases the homœopathic treatment is far more successful amongst persons of rank and fortune, than amongst the poorer classes of society. The process of cure is indeed slow! and the advantage is on the side of the doctor rather than the patient.

pair the functions of nutrition in the lens and capsule, by still further lowering the general health. Such are drastic aperients, local blood-letting, counter-irritation, mercurial preparations, &c. Whereas the means which are most likely to arrest the morbid processes on which cataract depends, are simply those which impart tone and vigour to the whole system. The treatment, therefore, which I would advise, does not consist in any one particular medicine or local application, but in assiduous attention to the general health of the patient, the use of suitable aperients, alteratives, and tonics; aided by a careful management of the eyes themselves; and I have generally found benefit from copious ablution of the temples, eyes, and cheeks with cold water. This view of the subject, too, may not form an entirely useless hint in the cases of those who have an hereditary tendency to this affection, and who consequently are the more likely to apply for the earliest assistance on the part of the profession.

The following may be considered as but a type of many similar cases which have come under my observation. A lady, of about sixty-eight years of age, visited Cheltenham, for the benefit of her health, in the spring of 1837; she drank so freely and injuriously of the Cheltenham waters, that her general health became more enfeebled, and her sight, which she had observed to be previously declining, became greatly impaired, with almost total blindness of the left eye. At this time I was first

consulted, and found a hard lenticular cataract, nearly matured in the left, with considerable dimness of the lens of the right eye. I could not have entertained the idea of operating in the feeble state of health in which this lady was then. I therefore put her upon a more generous diet, with a small quantity of wine, and ordered her quinine. After a short period of time, when I again saw her, there was a marked improvement of her general health and strength, and with it also of her power of vision ; she could then see to thread her needle or read a small print, as a newspaper. The cataract in the left eye, it is true, remained stationary, but the progress of the opacity in the other appeared to have been arrested, and it was not until some years afterwards, with increasing age, and under the influence of every drawback to her general health, amongst which may be mentioned a fractured limb, that the lens became more opaque in the eye most affected.

I must not omit to state that cataract sometimes undergoes spontaneous cure ; the cases in which this most frequently occurs are those of the soft lenticular kind, and the mode of cure is supposed invariably to depend upon the rupture of the capsule, and the escape of its turbid fluid or semifluid contents into the anterior chamber. Pressure or a blow on the eye has thus been the occasional means of curing cataract. Is it, however, certain that such cure never occurs but with rupture of the capsule ? Are we warranted in regarding it entirely as an ac-

cidental circumstance ; or are we to suppose such cure to occur, if one may so say, under the design of nature ? I own that I scarcely know how to answer this question. If the latter supposition be the correct one, we may regard art, when properly directed, so as to co-operate with nature, as not entirely useless. The following case affords so curious an instance of the spontaneous cure of cataract, under improvement of the general health, that I cannot refrain from relating it.

In February, 1840, I was consulted by Mr. Nicholson, of Berkeley Square, in the case of Mrs. D—'s infant, of Grosvenor Street, four months of age, whom I found to be labouring under congenital cataract of one eye, which was fully developed; in common parlance, "ripe" for the operation, which under the impression of the parents, that it would prevent a similar affection of the other eye, I was urgently requested to perform. Had no other reasons induced me to postpone the operation, the state of the little patient's health would have been sufficient, as he was very weak and emaciated, with all the secretions out of order. Our attention was therefore directed to the improvement of his general health, alteratives followed by tonics (quinine) were administered, and a small quantity of Madcira wine diluted in water or sago, was given at intervals. A healthy wet-nurse was immediately procured, its mother having, by over anxiety on the infant's account, fallen into a delicate state of health.

A short time afterwards, a few days only, there being some indieation of the other eye becoming affected, a consultation was held with my friend Mr. Travers, who approved of the general plan of treatment, but considered that the operation should not be delayed beyond the period at which the infant's general health should be restored. So rapid, however, was the improvement, that at the expiration of two months scarcely a vestige of the cataract remained; and the child's vision was nearly perfect.

So closely was the disease in this case connected with a poor and enfeebled state of general health; and so evidently was the cure connected with the administration of appropriate remedies, and the improvement of the vital energies, that it was difficult not to regard these in the light of cause and effect. For a great length of time no vestige of the capsule could be traced; and it was impossible to say whether the crystalline had been restored to its pristine transparency, or how the cure had been effected. I have, however, examined the child within the last few weeks, and found decided vestiges of the capsule in one eye, but not in the other.

COMPLICATIONS OF CATARACT, AFFECTING THE PROPRIETY OF OPERATING.

Before speaking of the various modes of operation for cataract, it will be as well to take a slight view of the cir-

cumstances under which the disease occurs, and the various affections with which it is liable to be complicated, that may prejudice the success, or absolutely forbid the necessity for its performance. It need scarcely be premised, that the cases most favourable for operation are those in which the disease is entirely confined to the crystalline lens or its capsule, and in which not only other parts of the eye are in a healthy condition, but the constitution of the patient is robust and sound, and the habits of life such as would lead one to expect the least possible degree of mischief from the wound which we are about to inflict on the eye.

Previous inflammatory affections of the outer tunics of the eye, which have left nebulous or leucomatous patches on the cornea, or of the deeper-seated parts, which have gone on to the establishment of adhesions of the iris to the cornea or capsule of the lens, &c., may all militate against the success of, or positively forbid the propriety of operating, according to their degree; and it need scarcely be added, that no operation should be entertained until any inflammatory affection, which may complicate the case, shall have been arrested in its progress. The affections of the deeper-seated structures of the eye, which most frequently complicate cataract, and entirely prohibit the propriety of operating, are amaurosis and glaucoma; complications that may be occasionally overlooked by an inexperienced practitioner. In either case

we shall probably learn much from a careful inquiry into the early history and symptoms of our patient.

If amaurosis or glaucoma be present in the early stage, vision may merely be impaired in a greater proportionate degree than we should expect from the extent of the opacity of the cataract; but, in their more advanced stages, there may be total blindness, inability to distinguish light from darkness, a circumstance which is very uncommon in cataract alone; great sluggishness, or perfect immobility of the iris, will lead us to expect that the disease is not confined to the lens only, for in the case of cataract alone the mobility of the iris is but little, if at all, impaired. A loose, tremulous condition of the iris will pretty certainly indicate that form of disease of the vitreous humour which has been before described. Another circumstance will frequently afford us much facility in our diagnosis. It rarely happens that the disease of the lens is in the exactly same condition in both eyes. If, therefore, the sight is not proportionately better in the eye whose lens is least opaque, we may reasonably suspect the existence of some deeper seated mischief as the cause of such deficiency of vision.

There is yet a question upon which authors are much divided in opinion. Is it right to operate for cataract in one eye, the other remaining sound? The fact is, that such question must be decided according to the circumstances of the case. It has been supposed by some, that

the formation of cataract in one eye tends to its establishment in the other, and that such tendency is diminished by its removal from the affected organ. This supposition involves two distinct propositions, which may or may not be true; and I very much doubt whether we are possessed of sufficient data upon which to decide them. They must therefore be at present considered as matters of opinion, and not of fact. Cataract being, as I have supposed it to be in most instances, a disease of constitutional origin, it is palpable that the establishment of the affection in one eye, evinces constitutional conditions which are most likely to favour its production in the other; but whether its removal from the affected eye can so alter these constitutional conditions as to diminish the risk of its establishment in the other, is highly problematical. One circumstance which may have tended to create misunderstanding in this question, probably is, that whilst the cases in which oculists have declined operating have come back to them, those in which they have operated successfully have been lost sight of, the patient having remained satisfied with this eye, even though the other has been subsequently rendered useless by the formation of cataract. Whilst, therefore, such inducements for operating are by no means great, the disadvantages arising out of the different position in which the two eyes are placed are very considerable; for the eye which has been deprived of its lens will require the aid of

spectacles, and even then will with difficulty accommodate itself to the other eye. Circumstances may, however, occur to render the operation necessary; in confirmation of which I may state, that it has not unfrequently occurred to me to operate upon military men and others labouring under cataract of one eye, who were about to remove to remote and distant countries where no assistance could be obtained in case of the other eye becoming affected.

OPERATIONS FOR CATARACT—EXTRACTION.

The operations for cataract in general use are those by extraction, by depression or couching, and by solution or absorption. But in addition to these ordinary modes of operating, there is yet another method to which it is my earnest desire particularly to call the reader's attention. It is a modification of that by couching and solution. Certain circumstances, of which further notice will be taken hereafter, may render the one or the other operation preferable; and, having briefly detailed them, my endeavours will be directed to a more full description of the nature of the treatment to be adopted, both before and after the several operations, which it appears to me is most frequently attended with success.

The operation for extraction consists in the division of the cornea and the removal of the opaque crystalline lens, which is one of great nicety and difficulty; and, as might

therefore be expected, no small number of mechanical contrivances in the construction of instruments have been, at one time or another, devised, with the view of facilitating its performance.

Eye instruments, however, are of old parentage; and I was greatly struck, when exploring the ruins of Pompeii, to find a number of eye instruments, which would have hardly done discredit to a Weiss or a Savigny, and which, although buried in the ruins of that city nearly two thousand years, much resemble many of those in present use.

Dexterity and judgment in the use of instruments is, however, far more essential than complication in their manufacture.

In the operation for extraction, the patient being seated facing a window, his head resting against a pillow, or firmly supported on the breast of an assistant, one lid is to be carefully secured by him whilst the operator, having adapted his own position to the perfect command and steady use of his hands, secures the other lid and steadies the eye with one hand, and pierces the cornea with the other. The knife is made to enter the cornea at its outer margin, as nearly as may be in the central transverse line, and close upon the junction of this tunic with the sclerotic, which, however, he must be careful to avoid wounding in this or the after stage of the section. The knife is then passed transversely across

the anterior chamber to the opposite side of the cornea ; and its point is to be thrust through it at this part, from within, outwards ; and it now only remains to complete this section of the cornea, by carrying on the sharp edge of the knife till it cuts its way through, (whether the operation be performed upwards or downwards,) and thus divides the entire half of the cornea. As the aqueous humour necessarily escapes, the pressure from within is apt to protrude the iris, and bring it under the edge of the knife. It is well to take every reasonable precaution to avoid this circumstance, which implies the risk of wounding the iris ; this cannot, however, be always avoided, even by the most skilful operator ; but fortunately, the clean cut wound which thus occurs is of all others the kind of injury to the iris which is followed by the least degree of mischief.

To secure sufficient room for the removal of the lens, one-half of the circumference of the cornea should be divided. Oculists differ in opinion as to which half should be divided, some recommending the upper, others the lower. The operator must of course have decided this point before proceeding to the operation ; because, accordingly as he makes his incision upwards or downwards, will he be obliged to take charge of the one or other lid, and to introduce his knife with the sharp edge in the one direction or the other. Where the operation can be conveniently performed through the division of

the upper half of the cornea, there is certainly this great advantage, that the risk of an excessive escape of the vitreous humour is less, and the pressure on the globe, for the purpose of forcing out the lens, is easier made from below than above; but it must be remembered that the operation upwards on the left eye requires to be performed with the left hand, over which it is not every one who has sufficient command.

The next stage of the operation consists in dividing the anterior surface of the capsule, so freely as to admit of the extraction of the lens from its investing membrane. This is done by means of the curette, an instrument sharp at its point only, and a little curved, which is introduced through the wound in the cornea, so as carefully to avoid any injury to the iris, and then by repeatedly drawing the sharp point across the capsule in several directions this membrane is freely divided. The next point is to remove the lens; and it sometimes happens, that by the force of the contraction of the orbital muscles, the cornea is no sooner freely divided, than the lens falls out of itself; but this more frequently happens when the capsule has been divided by means of the curette. If such, however, be not the case, we must make gentle pressure on the part of the globe opposite to the cornical incision, until the lens passes out, from the pupil, through the section of the cornea. This part of the operation requires the greatest gentleness, first, because if the lens be very

large, great tension is made upon the iris in its passage through the pupil, which is better and more safely overcome by continued gentle pressure, than by force; and, secondly, because much force may break up the cells of the vitreous humour, and cause it to escape in an undue degree.

It sometimes happens, that the incision of the cornea is not made sufficiently large to admit of the escape of the lens. In this case it must be enlarged, either by means of a knife or scissors, especially adapted for this purpose. In the passage of the lens through the pupil the iris may become displaced and tucked over, as it were, into the lips of the wound. Great caution is required to restore it to its proper position by means of the blunt end of the urette, or this is sometimes spontaneously effected under the contraction of the iris, by the stimulus of light. Between all the stages of the operation, the lids should be allowed to close, and be re-opened on commencing the next step. When all is completed the lids should be carefully closed; some persons recommend the application of a strip or two of adhesive plaster for this purpose; it is generally, however, sufficient to allow the patient to shut his eyes, and place a piece of soft linen, dipped in cold water, over the lids and temple. The patient is then to be kept very quiet in bed in a darkened apartment.

COUCHING.

Couching or depression is an operation of far less difficulty in its performance. The patient and the operator must be placed in the same position as in the instance of extraction, and the pupil should be previously dilated by means of belladonna. This operation is performed by means of a needle, of which several varieties have been recommended by different surgeons, some using them quite straight, others slightly curved. This is not, however, a matter of very serious consequence.

The lids being secured, as in the case of extraction, the needle is introduced, not as the knife was, through the cornea, but through the sclerotic, at its outer margin, within a line or two of the junction of this membrane with the cornea, and slightly above the central transverse line; having gently forced the needle onwards and a little upwards, in front of the lens, till we see that its point has arrived at its opposite margin. We now make gentle pressure upon the lens downwards, until it is removed from the field of vision; and, having held it in this position for a second or two, the point of the needle must be gently raised, and not withdrawn, until we see that the lens is not disposed to rise again into the field of vision. In this operation the capsule of the lens is detached from its connexion with the hyaloid membrane of the vitreous, and some of the cells of this substance are

broken down. It is evident enough, that such injuries should be inflicted with the greatest gentleness; and, although the operation is nothing in difficulty, as compared to extraction, yet its careless performance, or negligence of the proper previous or after treatment, may be most disastrous.

Some modification of this proceeding consists in what is technically called the operation by reclinature. In this case the lens is not pressed directly downwards, but is turned, as it were, upon its axis, the anterior surface being kept upwards, the posterior downwards, and pressed gently to a little below the level of the lower margin of the pupil. A distinct instrument has been recommended for this operation, which is not, however, necessary.

SOLUTION.

The operation for solution is commenced in a manner exactly similar to that of couching, excepting that the needle used for this purpose is not only very sharp at its point, but is, to the extent of a few lines from the point, double edged, and sharp on both edges; this instrument having been introduced as in the operation for couching, its cutting edge being turned towards the lens, is drawn in different directions across its anterior surface, so as to break or cut it up in as many portions as can be conveniently done. If the cataract be perfectly and entirely

fluid, so soon as the capsule is divided, the fluid escapes into the anterior chamber, and the operation is finished. It sometimes happens, that the nucleus of the lens is very hard, whilst the surrounding parts are in various degrees of softness, from a eheesy or gelatinous to a perfectly fluid consisteney.

Some surgeons have recommended the perforation to be made through the cornea, instead of the sclerotic. I cannot, however, say that I have ever witnessed any advantage from this method.

In this mode of operating it sometimes oeeurs that a considerable mass, or the whole of the lens, in a hardened state, falls forward into the anterior ehamber, and may press upon the margin of the iris, thus causing much pain and inflammation. It will be neecessary, in such cases, again to introducee the needle, to remove it from this position. Even after some days have elapsed, the eye being at the time in an active stage of inflammation due to this pressure, I have frequently succeeded in removing the source of irritation by the re-introduction of the needle, and the case has terminated most favourably.

MIXED OPERATION ADVOCATED BY THE AUTHOR.

It now remains to describe the fourth method of operating, to which I have long given a decided presrcnec. As this operation holds a somewhat middle place between couching and solution, I am hardly, perhaps, entitled to

claim for myself the merit of originality, although, as far as I know, this plan has never been advoeated by any practical oculist. It will, however, have been sufficient for me to have drawn the attention of the profession to an operation, by no means diffieult in its performance as compared with that by extraction, and which I can strongly recommend, as respects its results, not from theoretical reasoning, but from a most extensive experience, having had recourse to it in a large proportion of the great number of cases, upwards of seven thousand, of cataract, in which I have operated in India, and that, too, with great success.

The operation is no less simple in its description than in its performance. The instrument I use is an ordinary couching needle with a double cutting edge, as in the operation for solution. The needle being introduced as before described, when speaking of couching and solution, I first endeavour to cut up as much of the lens in situ, without disturbing it from its natural position, as possible. If the cataract be of the softer kind it of course yields to the needle, and the operation then becomes simply that by solution ; if it be so hard that it cannot be cut up, the capsule at least is freclly lacerated, and then the point of the needle being raised, is made very gently to press the lens downwards to the extent of a few lines only, and just sufficient to admit of the entrance of a few rays of light. It rarely happens, however,

that the cataract is so uniformly hard but that some portion of it at least may be thus cut up. The lens being held in this position for a few seconds, the needle is then carefully withdrawn. Belladonna should now be kept constantly applied to the orbital ridges, for the twofold purpose of freely admitting the access of the aqueous humour to the lacerated lens, and for facilitating the vision of the patient during the process of absorption. The rationale of this operation will be fully discussed when speaking of the comparative merits of the different modes of operating for cataract.

TREATMENT PREVIOUS TO OPERATING.

It has been already stated, that certain conditions both of the general health and of the eye itself, as respects its freedom from inflammatory action and other complications of disease, are necessary to secure the success of the operation for cataract. Not contented, however, with the mere freedom from any decided and well pronounced bodily ailment, the oculist, foreseeing the result of the injuries he is necessarily about to inflict upon this delicate organ, has almost, from time immemorial, considered it right to adopt certain measures, with the view to prevent the occurrence of inflammation, or to mitigate its intensity should it set in. The measures which have been most frequently adopted, are, I am persuaded, generally of too lowering a character. It must be remembered

that of the three modes of operating in general use, that by extraction, although doing violence to many parts of the eye, and therefore liable to set up much inflammation, requires all the reparative energies of nature, to set about and speedily accomplish the union of so extensive a wound of the cornea; whilst the operation by solution in the most favourable cases, and where the cataract is entirely fluid, is by far the most gentle, stands in need of such a healthy condition of the system generally, and the eye in particular, as may best promote the restorative powers of nature for the absorption and removal of the dissipated lens. The operation for couching, either by depression or re-clination, inflicts a greater injury than that by solution, inasmuch as the lens, with its capsule, is partially broken down from its natural attachments, and considerable injury is inflicted on the vitreous humour; here, however, where one might anticipate considerable inflammatory action and much mischief, we have the testimony of the great majority of oculists to the effect that it is far less frequent, and when it does occur, less commonly of a severe character. Can this be due to the fact, that for an operation supposed to be much less severe, a less energetically lowering treatment is previously adopted? Yet in the operation for couching, such lowering treatment may be thus much the less injurious, in that we require comparatively little assistance from nature; the cure of the cataract is me-

chanical ; it has been forced out of the field of vision ; only let the punctured wound heal up favourably and no inflammation occur, and the case is finished ; nature is neither called upon to repair a large wound nor to remove by absorption materials impeding the powers of vision.

Some surgeons are in the frequent habit of having recourse to blood-letting, both general and local, in many cases of cataract, previously to operating, with a view to preventing inflammation ; and yet, under other circumstances, the idea that blood-letting has any such power is pretty generally condemned. For my own part, I consider this practice useless in most cases, and injurious in many ; it is simply necessary to get the patient into the best possible state of general health previously to the operation, which must be effected by one course of treatment in the one case, by another in the other, according to the circumstances of each. The various inconveniences which are apt to succeed such operations may by ill luck occur to any one in spite of the utmost precaution. It is impossible always to account for them. A little more force may have been used, a little more injury may have been inflicted ; or, on the other hand, the unsuccessful operation may have been more gently and more quickly performed than the successful one. All the circumstances we cannot as yet understand, any more than why, of two persons, to all appearance in equal

health, the one shall meet with a severe compound fracture and do well without a drawback, and the other, with a similar or slighter injury, shall die of tetanus or secondary abscess. This, however, we do know, that the absence of all well-pronounced disease, and a good state of general health as expressed in the aspect and feelings of the patient, the quiet state of the circulation and healthy performance of all the functions of the system, are the conditions most favourable to the performance of this and all other operations ; they are therefore those which we are to endeavour to obtain. No doubt many persons afflicted with cataract are plethoric, and may labour under symptoms of determination to the head ; but these are great constitutional conditions, and not to be removed by a single bleeding. If the operation were one of life and death, and admitting no delay, it might be right to bleed largely and operate immediately, or soon afterwards ; but as it is, our patient will stand the best chance by patiently awaiting the slower effect of such measures of general treatment as will put him in a better condition to submit to the operation and secure its success. More frequently, however, the very opposite condition occurs, in which we find the patient's health enfeebled and broken, and requiring a tonic and invigorating course of treatment preparatory to the operation ; under these circumstances I have found the greatest benefit from a course of quinine. It is well that the bowels

should have been freely evacuated a few hours before the operation, and for this purpose the mildest aperient consistent with efficacy should be selected. I am also strongly disposed to believe in the influence of an opiate as preventive of inflammation; and with this view, where nothing is present to contraindicate its use, the bowels having been freely evacuated an hour or two previous to the operation, I generally administer a short time before it a medium dose of opium, either in its solid form, the tincture of opium, morphia, or Dover's powder. I was first led to adopt this plan from the degree of success which I observed to follow it in the practice of the native Indians,—a success far greater than could have been anticipated, considering the rudeness of the instruments they employ, and their entire ignorance of anatomy, physiology, and all principles of surgical practice.

TREATMENT AFTER THE OPERATION.

The treatment to be adopted after the operation must depend entirely upon circumstances, but I should caution the practitioner who has not had much experience, against the too anxious expectation of evil, since such a habit of mind will induce him somewhat to prejudge results, and to adopt measures of treatment far severer than the case may sometimes really require. After either operation, very active inflammatory action may set in, which may need the use of the lancet; and in this instance,

as in the ordinary forms of ophthalmia which require blood-letting, one free venesection is better than repeated smaller ones; but in adopting the antiphlogistic treatment, especially after the operations of extraction or by solution, great caution is required not to push the practice so far as to impede those reparative processes of nature on which we are dependent for the ultimate cure. Antiphlogistic treatment will, however, be rarely needed if those precautions have been taken which are most essential previously to the operation, if the operation itself has been performed with care and gentleness; and, above all, if immediately after its performance every precaution has been taken; amongst the most important is great care not to expose the eye too much to the light from an over anxiety to see whether our operation has been well performed; carefully and sedulously to keep the eye cool by the frequent re-application of linen dipped in cold water; to keep the patient extremely quiet and composed, and in a darkened room. The opiate may be advantageously repeated after the operation; and we should be careful to secure a free evacuation of the bowels on the next morning. Nothing but the simplest nourishment should be taken, as a little arrow-root or weak broth. Diluents, as toast or barley water, may be used freely, and saline diaphoretic medicines be administered. After the operation for solution, if the lens was comparatively hard, the risk of inflammation having sub-

sided, the process of absorption may sometimes be promoted by the administration of minute doses of mercury combined with tonics.

COMPARATIVE MERITS OF THE VARIOUS MODES OF OPERATING FOR CATARACT.

Considerable difference of opinion exists as to the comparative merits of the various modes of operating. Having compared the three methods of operation in general use, I shall then beg leave to draw the reader's especial attention to the fourth method which, as I have before stated, has been chiefly adopted by myself.

Much must of course depend upon the nature of the affection ; for whilst there are some forms of cataract so hard as not to admit of being cut up *in situ*, as in the operation for solution, the softer cataracts again would not admit of extraction ; for no sooner is their capsule divided than they disperse, leaving, perhaps, but a small nucleus of harder consistency. Under the same circumstances of great and universal fluidity, even the attempt at depression is likely enough to rupture the capsule and admit of the free escape of its contents. It is therefore self-evident that it is in the case of hard lenticular cataract chiefly that extraction can be said to offer a superior advantage over any other operation ; but then nothing has been said of couching, or of many other circumstances which must be taken into consideration.

The operation of extraction, unquestionably the most difficult of performance, appears to be the one most in vogue amongst the best surgeon oculists of this country ; and I must do them the credit to say, that in no country that I have visited have I seen this difficult and delicate operation performed so well or with such a degree of success. A just confidence in their own dexterity may have given them their decided preference for this over all other modes of operation, in such cases as admit of its application ; but this, I am bound to say, is not sufficient warranty for such preference. Many other weighty matters are to be considered, which in my opinion turn the scale against them. Let it not, however, be supposed that I regard extraction of the lens as in all cases unwarrantable ; I have frequently performed the operation, and am prepared to do it again ; but I only say that the cases in which it is to be preferred to the other methods are comparatively rare, and that no skill on the part of the operator can reduce its risks to the level of those by solution and couching. Truly it may be a pleasant thing to the patient to have the offending member removed, absolutely removed from the eye, and suspended in a spirit-bottle, the object of curiosity to his neighbours and of contemplation for himself ; but if the eye has been lost in the attempt, if the lens in the spirit-bottle has been supplanted by a denser and irrecoverable mist ; this is no subject of agreeable contemplation to the surgeon or his patient !

The difficulties of extraction are so great, that the justly celebrated Baron Wenzel, is reported to have said that he put out a hatful of eyes in learning it; the many improvements due to the exertions of himself, and many oculists since his time, have materially diminished this difficulty, and the expression, which with him was perhaps rather a pleasantry than a truth, is by no means applicable to the present day; besides, however, the ordinary difficulties, many circumstances, independently of those already enumerated, render this operation either extremely difficult or utterly impracticable. Adhesions of the iris, for instance, to the cornea or capsule of the lens, if to any considerable extent, will entirely frustrate this operation. Those conditions of general health which would almost inevitably prevent the success of extraction, may not even materially interfere with the success of the other modes of operating. These, too, can be performed at almost any age, or under any peculiarity as to the original construction of the eye, whilst extraction may be almost said to require a prominent eye, and a large cornea and anterior chamber for its performance.

Against couching, it is argued that the lens frequently slips back into its former situation, or that it occasionally induces mischief by being pressed down upon the retina, and thus producing paralysis of this delicate nervous expansion. That such is occasionally the fact is undoubtedly true, but it is questionable whether such a cata-

strophe is not more frequently due to the carelessness of the operator than to the nature of the operation itself. Such comparison, to hold good, must suppose each operation to be performed with the most perfect care and skill. I have already had occasion to point out the disastrous results of careless and negligent couching, and I am disposed to think that the operation, even in this country, has not at all times had the fair play it ought to have had, not so much from the want of skill on the part of the operator, as from that degree of carelessness and indifference with which any operation is liable to be treated, which is falsely considered to be so easy as to require no great attention or exertion. This is not the fault of ophthalmic surgery in particular, or even of surgery in general ; from the nursery to the last hour of his existence, man is apt to do that well which requires some exertion and display, whilst he does that in a slovenly and careless manner, which is so easy, that its perfect performance was readily in his power.

The latter objection to couching must ever, however, be regarded as a formidable one, since the circumstance may occasionally happen even in the hands of the most skilful surgeon. The previous objection of the lens slipping back into its former situation, is one of less serious consequence, inasmuch as this inconvenience is readily surmounted by a repetition of the operation, to which comparatively little objection can exist, inasmuch as it is one

of but little pain and risk, neither of which indeed can be said of extraction. Such is the opinion expressed by Mr. Samuel Cooper, in his valuable surgical dictionary : he says, "I cannot help remarking how judicious it is never to attempt too much at one time in any mode of couching. It happens in this, as in most other branches of operative surgery, that celerity is too often mistaken for skill : the operator should not only be slow and delicate in achieving his purpose ; he should be taught to consider, that the repetition of couching may, like the puncture of a vein, be safely and advantageously put in practice again and again ; and with far greater security, than if, for the sake of appearing expeditious, or avoiding the temporary semblance of failure, a bolder use of the couching needle should be made than the delicate structure of the eye warrants."

The following comparison of the results furnished by the different modes of operating, is taken from the English edition of Dr. Littell's work, on the diseases of the eye. Of three hundred and six cases of extraction at La Charité, the cures were in the proportion of two and a half to one ; while of an equal number depressed by Dupuytren, at the Hôtel Dieu, they were more than five to one. Of seventy operations by extraction, forty-three by displacement, and twenty-one by keretonyxis, (the operation by solution,) performed at the institution last mentioned, between the years 1806 and 1810, the successful

cases were respectively nineteen, twenty-four, and seventeen. Dr. Littell also speaks in the following terms of the practice of the native Hindoos, to the truth of which I can bear ample testimony, from the impression of my experience whilst in India, although I never had the opportunity of obtaining any statistic accounts of their operations. "The native Hindoos," he says, "practise a rude method of depression, through a puncture previously made with a lancet; and of seventy-seven operations thus performed, the cures were as two and a half to one." Nothing can be more striking and convincing than the perusal of these statistical observations, by which we find that in the French capital, a city second to none for surgeons of skill and boldness, the operations by extraction are not so successful by one half as those by couching, and that depression but indifferently performed by the unskillful Hindoos is equally successful with extraction, as performed in a city the centre of civilization. M. Sanson, in an article on cataract, in the *Dictionnaire de Medicine et de Chirurgie Pratiques*, after comparing the various methods of operating, and affording a strong preference to couching over extraction, concludes in the following words; "Toutes les fois qu'à l'Hôtel Dicu du moins on a voulu faire des essais comparatifs, ils ont été en faveur de l'abaissement, soit qu'on ait opéré en même temps un certain nombre d'individus placés dans les mêmes circonstances, soit que sur un même sujet, on ait opéré un

œil par abaissement et l'autre par extraction. Pour ma part, j'ai employé jusqu'à présent cette méthode exclusivement à toute autre, convaincu par les essais comparatifs, dont je viens de parler et dont j'ai été témoin, et je n'ai eu qu'à me féliciter de cette pratique. J'ai vu sans doute des inflammations consécutives, mais jamais elles n'ont été assez violentes pour compromettre la transparence de l'œil."

The operation by solution, then, in the ordinary acceptation of the term, being only applicable to the softer forms of cataract, can hardly be brought into comparison with those by couching and extraction, which are both most applicable to the harder forms of the disease. It may, however, be fairly asserted, that care and skill in operating being equal, and the appropriate cases for each mode being selected, of any given number of cases, the degree of success attending those operated upon by solution will be far greater than that of those by couching or extraction, as is seen in the statement above quoted ; whilst the infliction of such mischief as may induce permanent blindness, which, under the most skilful management, must sometimes occur in the latter cases, can rarely, if ever, happen in the former.

It now remains for me to explain the rationale of my own operation, and to compare it with the three already described.

In ordinary couching, when the capsule or investing

membrane of the lens is not ruptured, the lens almost invariably remains entire and unabsorbed, although, from being wholly or partially separated from its attachments, it may undergo some diminution of bulk. Cataract sometimes undergoes spontaneous cure ; such however rarely, if ever, occurs unless from some cause or other, (and not unfrequently, from mechanical injury to the eye,) the capsule is ruptured, by which the access of the aqueous humour is permitted to the lens ; and in such cases the capsule may be almost invariably seen shrivelled up.

The rationale, then, of my mode of operating depends upon effecting such a laceration of the anterior surface of the capsule, as to admit of the free access of the aqueous humour to the lens ; and few indeed are the cataracts, if any, that will not, under such circumstances, become partially absorbed at least. Then, in proportion as the cataract is hard, and less likely to undergo extensive absorption, is it necessary very slightly and very gently to depress it, but that only to the extent of a few lines, just to admit, in the first instance, a few rays of light only. This depression, far too slight to risk the fall of the lens upon the retina, is yet sufficient partially to break through its attachments with the vitreous humour and its hyaloid membrane, by which some of its sources of nourishment being cut off, as in the operation for couching, it tends gradually to dwindle away. Be this, however, as it may, whether partly from this source, and partly

from the partial absorption of the lens, and the escape of the Morgagnian fluid, or entirely from the absorption of a portion of the lens, or that the lens thus partially detached, falls gradually a little lower from the effect of specific gravity, certain it is that the opening for light, which was at first of but a few lines, gradually increases until there is sufficient space left open to admit of very useful vision. This is, however, supposing the least successful result of the operation; and, if after the lapse of some time, the benefit obtained should appear insufficient, nothing can be easier than to have recourse to the operation again, and it will rarely indeed be found, that a repetition of these means fails to effect as perfect a cure as the most successful operation by extraction. Although it has not often occurred to me to find it necessary to repeat the operation, a circumstance which I attribute mainly to the great care and pains I have always taken most freely to lacerate the capsule; yet I have had sufficient experience of this repetition to give my full assent to the opinions of Mr. Samuel Cooper, which are before quoted, and which apply with admirable force to this method of proceeding. More frequently it happens, that if the capsule be freely lacerated, the process of absorption goes on freely and rapidly; and no one who has not repeatedly had recourse to this operation, would imagine how hard a cataract may become in great part absorbed by the continued and free access of the aqueous humour to its

structure; so that a first operation even is very frequently successful beyond all expectation.

In comparing this with the other modes of operating, the first advantage which it presents is its almost universal applicability; for whilst in by far the majority of cases, one operation is sufficient to restore the patient to sight, there are indeed but few, if any instances, in which so desirable an end may not be effected by its repetition. Over extraction it presents all those advantages which have been enumerated as belonging to eouching, when comparing that with the former operation; but it possesses these advantages in a degree by so much superior, in that the serious inconvenience sometimes attending the operation for couching, namely, pressure of the lens upon the retina, cannot occur in this mode of proceeding. The operation, moreover, being more gentle in its performance than that of couching, is attended with far less risk of after inflammation; for whilst in couching, whether by depression or reclination, many of the cells of the vitreous humour are necessarily broken down; in this operation, if carefully performed, a very much less degree of injury is inflicted upon this structure.

Thus, whilst the risks of inflammation are infinitely less, the most successful cases of this operation afford as perfect a cure as the most successful ones of eouching and extraction; and it will be found, that whilst a failure of these latter operations is frequently followed by total

and irrecoverable blindness, such an unfortunate result can rarely, if ever, occur in that, which I am now advocating. The worst that can happen being a necessity for its repetition.

Against this operation it may be objected, that the cure is not immediate, but slow in its progress. Cataract, however, is not a matter of life and death ; and it would appear to me, at least, that in the case of blindness, a slow cure with little risk, is far preferable to a speedy one with great risks. Surely any person at the middle age, or even many years past that period of life, would prefer waiting a few weeks, or even months, for the restoration of the blessings of sight, which were to last him the remainder of life, than, in a reckless and impetuous anxiety for speedy vision, run the risk of total and irrecoverable blindness. It is said, that in elderly persons the process of absorption goes on so much slower ; this may be so to a slight extent ; but I have never observed this to be the case to a degree sufficient to militate against the propriety of this operation. In some measure in accordance with the degree of consistency of the lens, and the extent to which it has been broken up, and its capsule divided, will absorption be quicker or slower, and independently of these considerations much variety will obtain. It must not, however, be forgotten, that after extraction a considerable time must elapse before the patient can safely use his eyes. And I am not sure but

that one circumstance, which greatly contributes to the success of this operation, is the gradual restoration of vision, by which those risks are avoided which are due to the sudden and full flash of light which is admitted to the retina in the operation of couching and extraction.

CATARACT AS OCCURRING IN THE EXTREME OF OLD AGE.

Amongst the circumstances especially modifying this form of disease, age may be considered as one of the most prominent.

Cataract is often the disease of very advanced age; and, as it has been before observed, the operation by solution has been by some persons particularly objected to in old persons, on the grounds that absorption is carried on too slowly, at this period of life, to effect a cure. Such is not, however, as I believe, a sufficient objection; but the real fact is, that the cataract is, under these circumstances, too hard, in the majority of cases, to admit of the application of this method. If, however, we are to distrust the powers of nature at this advanced period of life, in the mere matter of absorbing a fluid or gelatinous lens, a fortiori, must we distrust her efforts for the repair of such a breach of surface as is occasioned in the method by extraction; and, in reality, the truth of a foregoing observation is admirably borne out here, for we must choose that operation which calls upon nature for the least demand of repair, namely, couching, which is in-

calculably the best suited to those periods of life. I cannot charge my memory with the fact, as to what is the most advanced period of life at which I have performed the operation with success; but I have known it to be performed successfully at past the age of eighty.

IN THE EXTREME OF YOUTH.

From the extreme of old age we may go to the extreme of youth, and find cataract to be a congenital disorder. Whether, however, the disease be really congenital in all the cases thus described, or whether, from the first application of the stimulus of light, or some other cause, the disease may have commenced within a few hours or days of birth, must be a question of some doubt, inasmuch as in most cases the discovery of the affection is not made for some days at least after birth. It is, however, a sufficiently interesting subject of contemplation, to think that our little patient is at this early period shut out from the advantages of sight, and that art can in this case confer upon him a blessing which nature, albeit in other instances most bountiful, has denied him. The whole range of medical and surgical science does not, perhaps, present a more interesting fact than this; a fact which, if it stood alone, might well claim for us the respect and gratitude of the public; and raise the honest pride of the profession into whose hands such great and wonderful powers are committed.

Congenital cataract is in the great majority of instances of the soft lenticular character, and is therefore admirably adapted for the operation by solution. No especial directions are connected with this operation which require it to occupy that distinct place in the history of cataract, which has so generally been assigned to it. From the early age at which we are frequently called upon to operate for congenital cataract, it is not always practicable to get the globe of the eye so fixed as to enable us to puncture the sclerotic coat; it is sometimes necessary, therefore, to introduce the needle through the margin of the cornea, a line or two from its junction, with the sclerotic, instead of through this latter membrane. Where it can be done I always prefer piercing the sclerotica; in either case great gentleness should be used, and especial care taken to break up the lens in situ, for the risk of breaking off a considerable portion of hard lens, and its falling into the anterior chamber, and pressing on the iris, is the more important here, inasmuch as the tender age of the patient at which the operation is performed, renders it the more difficult to take those steps which such a catastrophe may require. Should the absorption be incomplete, the operation may be safely repeated after a certain length of time; such, however, I think, need rarely be the case; and, judging from my own experience, in which I do not once remember to have had recourse to the operation even a second

time, I am at a loss to understand how some eminent oculists have had to repeat it so often as they have described. If any further observation on the subject be required, it may be summed up in the words of that sound practical surgeon, whom I have before quoted, who, in referring to the operative success of the late Mr. Saunders in these cases, says, "For my own part, I am so fully convinced of the mischief which has been done to the eye by the rash boldness, awkwardness, and unsteadiness of numerous operators, that it appears to me, the inculcation of gentleness and forbearance in operations for (this form of) cataract, is the bounden duty of every man who has occasion to write on the subject. Great manual skill and invariable gentleness, indeed, seem to me to have had more share in rendering operations successful, than any peculiarity either in method, or in the instruments employed."

Congenital cataract is by no means very uncommon ; a great sensation was produced when Cheselden first operated successfully in this disease ; since his time, however, there are few eminent practical oculists who have written on diseases of the eye, who do not appear to have performed it. It has occurred to me to perform it in sixty-eight cases. Much has been said as to the age at which this operation may be safely attempted ; taking into consideration all the circumstances connected with the state of the eye itself, and the general

health, which are necessary to be observed in all other cases, I am disposed to advise that the operation should not be delayed beyond the second or third year, taking care that a period should be selected at which the infant is free from the irritation of teething. I do not, however, mean to say that it may not with propriety be performed before this age; but I can see no good reason for delaying it beyond this period; for although experience of facts does not entirely bear out the truth of Dr. Farre's ingenious observation, in his edition of Mr. Saunders's work; namely, that the retina, if long excluded from light and the exercise of its functions, is liable to become paralyzed, or at least in a condition less likely to profit by the operation if delayed; yet there is some sound truth in the observation; and a more important reason is, that the earlier the operation is performed, within certain limits, the less confirmed is that constant rolling motion of the eye which so peculiarly characterises this disease, and the more likely is the patient to adapt his eye to a distinct and perfect vision in the absence of the lens, which can in after life be only compensated by the use of cataract spectacles.

The reason for which I say that Dr. Farre's observation is not entirely borne out by practical experience is, that all other structures of the eye being sound, and other circumstances favourable, no age, as I conceive, is to prohibit us from having recourse to this operation.

When on a professional visit to his Highness the late Rajah of Coorg, in the summer of 1831, he requested me to see a favourite retainer in the palace who was born blind, and at that time twenty years of age. I operated on both eyes, and with perfect success. Mr. Stafford, it appears, also has operated successfully in a case of congenital cataract at the age of twenty-three years. The case is a most interesting one, and may be seen in the seventh volume of the Medico-Chirurgical Transactions. These are the most advanced ages at which I am aware of the operation having been performed; but there can be no reason, so far as I can see, necessarily to prevent its success even at a much farther advanced age.

I have only once had occasion to operate for congenital cataract since my return to England. In the summer of 1836, I was requested by Mr. Colvile, of Barton, in Gloucestershire, to see the son of his steward, a child between three and four years of age, who was born blind. I found the patient to be labouring under congenital cataract of both eyes; the cataracts were in common parlance "ripe," and all other circumstances being favourable for the operation, I performed it on both eyes, and with perfect success.

CHAPTER VIII.

MALIGNANT DISEASES OF THE EYE—CANCER OF GLOBE—PECULIAR FORM OF CANCEROUS ULCERATION, AFFECTING CHEEK AND LIDS—MELANOSIS AND FUNGUS HÆMATODES OF GLOBE—TWO CASES—CAUTIONS ABOUT THE OPERATION OF EXTRIPATION, AND CASES LIABLE TO BE MISTAKEN FOR MALIGNANT DISEASE—VARIOUS FORMS OF TUMOURS OF THE LIDS—MECHANICAL INJURIES TO THE EYE—CONSIDERED IN RESPECT OF THE NATURE OF THE INJURY—ITS EXTENT,—AND THE TISSUES AFFECTED—AND AS RESPECTS THE HABIT AND CONSTITUTION OF THE PATIENT WHO SUSTAINS THE INJURY—ACCIDENTS TO THE EYE BY RAILROAD TRAVELLING, AND MEANS OF PREVENTION—EFFUSIONS OF BLOOD UNDER THE CONJUNCTIVA—INTO THE INTERIOR CHAMBER—FALSE CATARACT, &c.—OSSIFICATION OF VARIOUS PARTS OF THE EYE—OF THE IRIS—ENTOZOA IN THE HUMAN EYE—IN THE EYE OF THE HORSE—OPERATION FOR A CASE—ABSENCE OF THE EYES AT BIRTH—ARTIFICIAL AIDS TO VISION—THE TELESCOPE AND MICROSCOPE—LONG, OR FAR; AND SHORT, OR NEAR SIGHT—THEIR CAUSES—CHOICE AND USE OF SPECTACLES—CATARACT GLASSES—SPECTACLES AS MERE EYE PRESERVERS—SOME REMARKS ON THE PRESERVATION OF EYESIGHT—SOORMA, USED BY THE NATIVES IN INDIA TO GUARD AGAINST CATARACT, AND TO ADD TO THEIR BEAUTY.

THE eye may become the seat of what are termed malignant diseases; that is, of morbid growths, whose only tendency, in spite of all the efforts of art, is to in-

crease and involve the total destruction of the parts in which they are situated ; of morbid growths arising in all human probability out of constitutional states, and in the course of whose progress the system becomes so thoroughly contaminated with the material of disease as frequently to occasion its deposit in other and often vital parts ; and whose almost inevitable termination is sooner or later in the death of the sufferer. No class of diseases are so painful to witness, none so painful to endure, as those in which temporary relief is with difficulty afforded, and permanent cure is beyond our hopes or skill. In the particular department of the oculist, however, such diseases are happily by no means common.

The forms of malignant disease to which the eye is said to be most obnoxious, are cancer, melanosis, and fungus hæmatodes.

The older writers seem to have regarded cancer, (or, as it is also termed, schirrus or carcinoma,) of the globe, as by no means an uncommon disease ; whether such may have been in reality the case, or whether at that period, less accuracy having been observed, than is now the case, in distinguishing the several forms of malignant disease from each other, or from diseases in reality not malignant, it is difficult to decide. My own opinion, however, leans to the other conjecture. In the course of a very extensive observation, it has never once occurred to me to witness a case of cancer of the globe

of the eye, and in this my experience corresponds with that of Messrs. Travers, Lawrencee, Wardrop, and many other of the best writers and oculists of the present day, the further confirmation of whose opinion on the subject, by myself, is rendered the more interesting, if I may be allowed to say so, from the fact that so large a portion of my experience has been obtained in a distant land, and under circumstances, whether as respects habits of life or climate totally different, and in which diseases of the eye of all kinds are more prevalent than in this country. It has, however, occurred to me, as it has done to Mr. Lawrencee, to see diseases of the globe of the eye, which might at first sight have been supposed to be carcinomatous, but which have not in reality been so, and which have gone on to destruction of the organ itself, without contamination of the system, and therefore without destroying the patient.

It, however, sometimes happens that cancer, beginning in neighbouring parts, either implicates the ball of the eye by the direct extension of its growth into the structures of this organ, or by its enlargement and consequent pressure on the globe and obliteration of its functions. Extirpation of the morbid growth, if really carcinomatous, whether situated in the lids, lachrymal gland or other parts is the only means of arresting the progress of its growth; and in this, as all other forms of malignant disease, the profession is uniformly agreed

that an early extirpation affords the only hope of success ; whilst its performance, when the neighbouring absorbent glands or other parts have become implicated, is utterly hopeless.

Mr. Cæsar Hawkins, in a paper read before the Medical and Chirurgical Society, as also in his lectures, see the Medical Gazette, vols. xiv. and xx., describes a low form of cancerous or malignant ulceration of the skin of the cheek, which he terms the cancerous or phagedenic ulcer. A form of disease chiefly occurring to old people. Mr. Hawkins very properly and judiciously advises the removal of the ulcerated surface by the knife, cautioning practitioners against the treatment of this form of disease, "by the application of caustic, or other means which only irritate the part whilst they do not eradicate its basis, and the patient is thus rendered liable to be carried off with frightful destruction of the cheek, eyelids and nose, and much constitutional disturbance." I have seen this form of ulceration commencing in the skin of the cheek beneath the eyelid at either the internal or external angle of the eye, and extending to the eyelids themselves so as to affect their palpebral margins, and can bear testimony to the accuracy of Mr Hawkins's description as well as to the propriety of his opinions respecting the mode of treatment to be adopted, and the success of extirpation.

So decided, then, is the opinion of modern surgeons in

considering that genuine carcinoma never commences in the globe itself, that no surgeon would be warranted in undertaking the operation of extirpation of the eye for supposed carcinomatous disease of that organ, unless he had previously advised with others of his professional brethren, equally or superiorly experienced with himself in ophthalmic surgery.

MELANOSIS AND FUNGUS HÆMATODES OF GLOBE.

Melanosis and fungus hæmatodes, then, are the malignant diseases by which the globe of the eye is most liable to be affected. It is not necessary to dwell with great accuracy on the distinctions between these affections. They are both growths of what is termed a medullary character, their consistence being somewhat less firm than that of the ordinary consistence of the healthy brain. The striking difference is in the colour, that of melanosis being, as its name implies, perfectly black, whilst the fungous tumour being in itself of a lighter colour, varies in its shades and hues in proportion to its degree of vascularity, and when advanced to the stage of ulceration may form the interstitial deposition of blood, also assume a dark appearance. Whilst, however, melanosis seems to be confined to the later periods of life, fungus hæmatodes is not unfrequently observed even in infancy. With these trifling exceptions no further advantage is to be derived from a separate consideration founded upon

distinctions of these affections. Both are possessed of those characters of malignancy which have been before described. They are rarely amenable to any means of local cure or even arrest of growth, and in both, the constitution is but too liable to become so thoroughly contaminated, as that the sufferer in the end may fall a victim to the disease.

I am myself inclined to think that melanosis and fungus hæmatodes are essentially the same disease, differing in appearance only, and owing that difference probably to circumstances connected with that particular period of life at which the disease occurs. Both affections are considered, by many experienced oculists, as being inevitably fatal in their results. If such were really the case, nothing could justify the very formidable operation by which alone the disease may be locally removed and temporarily arrested, but the urgent desire of the patient to obtain such temporary relief as this operation may afford him. This, therefore, becomes a point of great delicacy, inasmuch as the particular form of the disease known under the name of fungus hæmatodes not unfrequently occurs to infants, who are unable to judge for themselves. The surgeon, therefore, unless destitute of all the kindlier feelings of humanity, and God forbid there should be any such, would naturally shudder at the idea of inflicting such an operation upon a poor little sufferer, without any, or but faint hopes of a permanent cure; nor could any parents submit their child to such barbarity. The immediate

risks of the operation excepted, my own opinion is very confident and decided, that in the case of fungus hæmatodes, occurring in early life, the operation, if performed without delay, may be perfectly successful. Many cases have occurred to confirm me in this opinion, one of which will be presently related ; nor is it unsupported by many high authorities. With respect to the disease when occurring in later life, whether under the form of fungus hæmatodes, or melanosis, I cannot speak with so much confidence. Many cases are recorded as having been permanently cured by operation. But it must be doubted whether some of the cases of successful extirpation of the eye have not been performed for diseases in reality not malignant. In the case of the adult, however, the patient's natural abhorrence to submit to such an operation may not unfrequently occasion a delay, which has been fatal to its ultimate success. This is a point well deserving the careful consideration, not of the oculist only, but the surgeon ; under many circumstances, the patient, who is unwilling to submit to an operation when first proposed, is most anxious for its performance at a more advanced period of his disease, when his sufferings are increased, and his fears are aroused, not by his confidence in the predictions of his attendant, but by the apprehensions to which his own sufferings give rise. The operation which might have been successful is now perhaps too late, some temporary relief may be obtained, but not, alas, a cure !

Melanosis, then, generally occurs at the middle or more advanced periods of life ; it commences with pain and impaired vision, the sight being speedily obliterated ; in the early stage, a dark slate-coloured object may be seen at the bottom of the pupil, and as the disease advances the pain increases, the globe of the eye is irregularly distended in size, the humours become turbid and the lens opaque, the sclerotic also seems to reflect the dark colour of the morbid growth which it covers, as it becomes thinner by distension and absorption, having a brownish or blackish cast. Gradually all the natural structures of the eye are destroyed, and a dark livid mass of tuberculated structure occupies the globe and passes out between the lids. The surface ulcerates and bleeds profusely, or large solid portions of the tumour become detached by a sort of sloughing process. The disease spreads rapidly to some of the adjoining parts ; vital organs may become affected, and the patient sinks under his accumulated sufferings.

Fungus hæmatodes, though often the disease of infancy or childhood, is not necessarily confined to this period of life. The morbid growth generally makes its first appearance quite at the bottom of the eye, commencing probably in the expanded retina, and is often recognized before either any pain is experienced, or the powers of the constitution appear to be much impaired. Vision, however, which from the earliest stage, is rendered incomplete, is soon entirely destroyed. At first the appearance

presented by the eye, on careful examination, is frequently as of a bright metallic plate or precious stone, situated at the bottom of the pupil, varying in colour in different cases, but usually very brilliant and powerfully reflecting the light; examined with a magnifying glass, and under a strong light, the pupil being dilated with belladonna, the vascularity of this growth is often clearly perceived even at this early stage, one or more small bright red blood-vessels being seen to ramify over its surface. The growth rapidly increases, as in melanosis, distending the globe; the pain increases, and finally all the structures of the eye are lost, to be replaced by this diseased mass, which likewise goes on to haemorrhage, sloughing, &c.

Fungus hæmatodes and melanosis have both been occasionally traced to an origin in mechanical injury, but more frequently come on in connexion with no evident and appreciable cause, being clearly diseases of constitutional origin. On the earliest period of their accession the general health may not present any very marked and decided evidence of derangement; but as the disease proceeds, anxiety of countenance, emaciation, dusky hue of the skin, quickened pulse, impaired appetite, and deranged secretions, to say nothing of pain of the part, and symptoms, especially referrible to other organs which may have become implicated in a similar form of disease, show how much the whole system is suffering; and the ultimate fatal termination of the case usually evidences

the deposition and growth of similar morbid structures, whether melanosis or fungus hæmatodes in the absorbent glands, skin, bones, or great internal viscera, as the brain, liver, lungs, &c. The diseases usually spread by contiguity of surfaces along the course of the optic nerve, and affect either the brain or its membranes in the parts directly in connexion with those structures.

No remedies have any specific power to check, or remove these diseases, and but few even to afford much relief to the sufferings of the patient. Local soothing applications, and at a more advanced period some opiate astringent lotions to soothe the pain and retard the haemorrhage, alteratives and aperients to keep down general febrile disturbances or subdue local irritation, and opiates to procure alleviation of pain, are the only means of affording even temporary relief.

The propriety of extirpating the eye comes therefore to be considered. The first question is, can the surgeon recommend it as an operation likely to effect not only a local but a constitutional cure—as likely to leave the patient free from any subsequent appearance of this form of disease, either about the orbit or optic nerve, or in any other part of the frame? This question, as regards fungus hæmatodes occurring in early life, I have already said I am disposed to answer in the affirmative—as respects melanosis or even fungus hæmatodes occurring at the middle period of life I am less competent to form a decided

opinion. A very early recourse to the operation is, however, the circumstance alone, which can offer any hope of realising this anticipation. The next question is, how far the surgeon is warranted in a more advanced stage of the disease in operating in conformity with the especial desire of the patient, to obtain relief from the sufferings of the mere local affection. In proportion as the disease is advanced do other structures become implicated in the morbid growths, the continuation of the optic nerve, the bones of the orbit probably, the membranes of the brain and other parts. The operation is consequently rendered very hopeless as a mere means of temporary relief.

The contiguity of the brain, the prolongation of the optic nerve into that structure, as well as other causes, render the operation of extirpation of the globe one of considerable risk to the patient; in its execution, however, it is neither difficult nor tedious, and although a natural repugnance is probably felt respecting it, even more than against many other operations, yet such repugnance is perhaps rather imaginative than real. The avoidance of suffering, and the permanent advantages to be obtained by it, being supposed to be equal, there is nothing in the operation itself as compared with numerous other operations in surgery, to discourage the surgeon from performing, or the patient from submitting to it.

The two following cases may prove useful examples of the propriety of giving up the decision of this delicate

and important point, to the oculist, where sufficient confidence can be placed in the accuracy of his judgment. In the former case delay was certainly fatal, where success might have attended the operation ; in the latter the operation proved successful, when delay would have been certainly fatal.

A remarkably fine and interesting child, three years of age, only daughter of Captain ——, commanding a China ship, was brought to me in 1825, in my official capacity of surgeon to the Bombay Eye Infirmary, the mother having observed something peculiar, resembling a squint, in the left eye. Having attentively examined it, I fancied I saw some discolouration of the crystalline lens ; the sight was imperfect, the pupil more contracted than in the other eye, particularly in a strong light. In order to form a more correct diagnosis I used the belladonna, and on the following day was enabled to discover, deeply seated in the posterior part of the eye, a tumour of the size of a small pea. This, from its appearance, might in any other situation have been taken for a finely polished ruby. Unwilling immediately to alarm the parents by announcing to them my opinion of the formidable nature of the disease, I put the child upon a constitutional plan of treatment ; but at the expiration of three weeks, the tumour had decidedly increased in size, the colour had become more dull, and a large artery was distinctly seen with smaller ramifications beautifully spreading over it. I

now considered it my duty to diselose to the parents the real nature of the ease, and as the child's general health had not began to suffer, owing probably to the treatment which had been adopted, I advised extirpation, and suggested the great importanee of this being done without delay, as the only chanece of saving the child's life. Before I made this eommunieation, they had a high opinion of my judgment in these matters ; but a proposition so repugnant to their feelings they thought proper to treat with the utmost contempt, nor would any reasoning of mine induce them to listen to it, or even allow me again to see the child. As the effeets of the belladonna went off, the extent of the disease was again eoneealed, which before this they had an opportunity of seeing most distinctly for themselves, and this perhaps confirmed them in the hope and belief, that nothing of such serious importanee was the matter. In this delusive hope they were strengthened by the opinion of a surgeon, since dead, whe had the reputation at least, of great skill as an oculist. This gentleman prescribed an eye-water ! and allowed the parents to take the child home, a distance of some hundreds of miles. I heard nothing more of the ease for about five months, when the mother again brought her to Bombay, and with the utmost sorrow and contrition, entreated me again to see her child, as she said, for the purpose of removing the eye ; in short, to do anything I pleased. The tumour had now inereased to the size of a

goose's egg, hanging over the cheek, with a copious discharge, of so offensive a character as to render the room and almost the whole house unbearable. The child had become greatly emaciated, and its agonies were intense. It was now of course too late; nothing remained to be done, but to soothe as much as possible its sufferings, which fortunately terminated within a few days in death.

A few months only subsequently to the fatal termination of the above case, a Hindoo child, nearly a year older than the one just mentioned, was brought to me with the same disease. The subject of it was apparently equally healthy, and the eye in many respects resembled the former, excepting that the tumour was of a more brown and dusky hue, and no blood-vessels were visible on its surface. Having watched the case for some time, to satisfy myself of the correctness of my diagnosis, and observing a progressive growth of the tumour, I extirpated the eye. The patient did well in every respect, and I had the occasional pleasure of seeing this child for several years after the operation, in the enjoyment of perfect health, and without any appearance of a return of the disease. The subsequent examination of the parts after their removal satisfied me as to the accuracy of the opinion on which I undertook the responsibility of the operation.

As the utmost accuracy of diagnosis is required before undertaking so severe and responsible an operation, it is right to say, that although no unnecessary delay in its

performance should be allowed, so as to risk the contamination of other parts, or the spread of the disease, yet a short time at least is required to satisfy the operator of the true nature of the case and a progressive increase of the disease ; nor should he in any instance undertake the operation on the authority of a previous medical attendant, until his own mind is perfectly satisfied ; for cases which at first sight might be unhesitatingly pronounced malignant, often prove not to be such. Tumours not malignant in character may be found within the globe of the eye, attached to various parts, and the peculiar glistening, bright appearance so frequently observed in the incipient stage of fungus hæmatodes, is not necessarily confined to this form of disease. Such a state may occur as the result of some mechanical injury to the eye or other cause, and I have frequently witnessed it where no malignant disease existed, and when either the diseased growth remained quite stationary, or was slow in its progress, and did not involve material injury to the general health. The globe of the eye may be destroyed under these circumstances, either by suppuration or ulceration, or may gradually dwindle away ; but as the system generally is not contaminated, as there is no risk to life itself, extirpation could not, with propriety, be recommended by an experienced practitioner, or be desired by the patient.

A peculiar varicose state of the vessels of the choroid coat, originating sometimes in accident, or chronic inflam-

mation of the deeper-seated structures of the eye, sometimes not traceable to any very marked cause, may not unfrequently be taken for fungus hæmatodes, or more likely perhaps, from its dark appearance, for melanosis of the eye. A case occurred to me a few years since. A labourer, on the estates of his Grace the Duke of Rutland, was suffering under this affection, which had been taken by several experienced surgeons in that vicinity for malignant disease, and extirpation of the eye was advised ; willing to take one more opinion before submitting to the operation, he was recommended to consult my brother, Dr. Jeaffreson, who was at that time practising at Grantham, and who, from a careful examination of the eye, the length of time the disease had existed, and the state of the patient's general health, doubted the malignancy of the affection. At Dr. J.'s suggestion he was sent to town for my opinion. I found him a good deal depressed from the anxiety which he had suffered ; entirely deprived of the sight of the affected eye, in which he experienced considerable pain, and the sclerotic coat of which was enormously distended ; I, however, immediately recognized the real nature of the disease, put the patient upon a good diet and tonics, and recommended his frequently bathing the eye with cold spring water, and occasionally using a mild astringent collyrium. He speedily lost all pain, and all anxiety was dispelled. The sclerotic coat was so distended, and the black veins were so dis-

tinctly seen through it, that I expected this structure must soon give way and admit of the escape of the contents of the globe; such, however, did not take place; the process of disease appears to have been arrested, and the man still continues free from all other inconveniences than the previous blindness and disfigurement, although between three and four years have elapsed since I first saw him.

VARIOUS FORMS OF TUMOURS OF THE LIDS.

The lids and other appendages of the eye are liable to be the seat of various forms of tumours, similar in character to those affecting other portions of the body, and for the most part requiring a similar method of treatment. Carcinomatous tumours, as well as ulcerations, have been already adverted to; and, amongst the rest, the most common are ordinary sebaceous tumours, warts, and nævi. From the peculiar situation of such diseased growths, their early removal, where such is likely to become at some future period absolutely necessary, is very desirable, as producing less risk to the eye itself, and occasioning a smaller wound with subsequent eschars, or contraction, in parts in which there is not much room to spare, and in which considerable breach of surface may give rise to entropium, ectropium, disfigurement of the person, or some other sources of inconvenience to the eye. For similar reasons, the knife is generally preferable to all other modes of extirpation, as being the most

economical of surface, as well as its being free from the risks attendant upon the use of escharotic or other strong applications in the vicinity of so delicate an organ as the eye.

The common enlarged sebaceous follicle is a form of tumour frequently observed on either lid, and is not uncommonly the source of perpetual irritation to the globe, giving rise to continued low inflammatory action, often of an insidious and destructive character. This tumour is readily removed by merely drawing a lancet or cataract knife across it, and squeezing out its contents. After which as much of the walls of the cyst as possible should be dissected out, or by gently rubbing or squeezing the sides together, sufficient inflammation is induced to procure their permanent cohesion and the obliteration of the cyst, which is otherwise liable to refill; or the wound may be kept open for a few days with this view.

These sebaceous or other tumours are not only liable to occasion chronic inflammation of the eye itself, but often complicate various affections of the lids, whose cure they impede. About two years ago I was consulted by a young lady residing at Islington, who was brought to me on account of a tumour of this character. She was also labouring under granulations of the lids of the same eye, which had not yielded to treatment; although her case had been most judiciously managed. The tumour, which had existed many years previously, had not

been the souree of much ineonvenienee, and was merely regarded by the patient as a great disfigurement to her person. I removed the tumour, and then the granular state of the lids, which had been kept up by it, speedily yielded to appropriate general and loeal treatment.

It is not neecessary to enter into a full explanation of all these forms of tumours, or of the mode of operating in each ease. Good common sense, if founded upon eareful study and observation, will rarely lead the praetitioner far wrong in these matters. Some of these tumours are situated over the laehrymal sae or duet, and require some extra eare in disseeting them away, lest injury should be done to these parts.

A elergyman in India, who had for many years laboured under a steatomatous tumour situated over the laehrymal eanal, experienced some increased growth of the disease whilst on furlough in England. Several surgeons, however, recommended its not being removed, as risking injury to the duet. The enlargement having continued to increase on his way out, so as to induce very eonsiderable disfigurement, and to oceasion great annoyanee, as a fixed objeet at the corner of the eye, he consulted me on his arrival at Bombay. I disseeted out the tumour without any injury to the duet, and without leaving the slightest disfigurement to his person. The tumour was the size of a hazel nut, and would have, doubtless, inereased rapidly, to the entire obliteration of the laehrymal eanal.

MECHANICAL INJURIES.

Exquisitely as the eye is protected from external violence, from its position, and by its own faculty of vision, which enables it to foresee and avoid danger; yet many mechanical injuries, do nevertheless, occur to this delicate organ.

It would be impossible, in an elementary work of this kind, to describe all the mechanical injuries of the eye. In the course of the preceding chapters, notice has been taken of the fact, that many of the forms of disease to which separate names and places are assigned in nosological catalogues, occasionally owe their origin to various kinds of mechanical injury, whether immediately followed by inflammatory or other symptoms, which may have attracted the notice of the sufferer, or by those slower and more insidious processes of change, which appear rather due to altered conditions of nutrition than to inflammatory action.

So various are the mechanical injuries to which the eye is liable, that the subject might form a distinct work of itself; or at least a series of cases would form a most interesting subject for a course of clinical lectures, which would be the more valuable, inasmuch as such cases for the most part fall, in the first instance, under the care of the general practitioner, who can rarely be supposed to have devoted much special attention to affections of the

eye. Thus, the earliest period, when the best chance of doing good exists, having gone by, it frequently happens that the pure oculist is not consulted until organic lesions and changes have been already firmly established. It behoves, therefore, the general practitioner to take every opportunity of making himself conversant with a class of cases which are likely to fall under his care at any period of his career, whether he may be fixed in a large town, or the most remote and secluded part of the country where no further assistance can be obtained.

This subject might be considered under several heads; first, as regards the nature of the injury inflicted; and secondly, as regards its extent, whether as affecting one or more tissues or parts; and thirdly, as to the state of health, &c. of the patient should never be lost sight of. Inflammation, it is true, is the most frequent and the most serious result of the greater number of injuries inflicted on the eye, and many of these cases present the most favourable as well as the most essential complications which require the powerful and decided use of antiphlogistic measures; and the more so, perhaps, in that they are liable to occur to persons in the prime of life, and in the full vigour of health, whose constitutions have not been broken down by any previous forms of disease. But even here this treatment must be savoured with discretion, and we must first inquire what are the objects to be attained. Some injuries may have been of such a nature

as at once to rob the patient of sight, as in some punctured wounds, gun-shot wounds, lacerations, &c., and no amount of bleeding can restore an organ essentially destroyed to its pristine health of structure and function. The surgeon must here act with discretion. It will be enough if worse mischief than blindness is warded off; and he will not be warranted, by a long continuance of lowering and depletory measures, in depressing the powers of his patient, and doing mischief to his constitution, in the idle hope of restoring that, which is utterly and irretrievably lost. This caution is not so entirely unnecessary as it may appear to some of my readers to be. I have known very many instances, where the perseverance in these measures, fruitless as respected any hope of restoring sight, has been most unfortunate and pernicious, and has paved the way for a series of constitutional disasters, which, but for the occurrence of such accident and its treatment, might have been avoided. Then, if the injury be less formidable, as regards its immediate effects, it must be remembered, that not only is inflammation to be kept down, but that the vital energies may be called upon for certain extensive processes of repair. This point of practice may, therefore, be a nicer one than would at first sight appear to be the case. The lancet may knock down inflammation, but it may do more, it may knock down those powers of the system of which we shall presently stand most in need. In an ordinary fracture, some

degree of inflammation must necessarily occur ; but, as the parts implicated are not such as to be materially injured by a slight degree of inflammation, the surgeon is not greatly anxious on this score. Proper position, quiet and rest, low diet, and an aperient, are generally sufficient to keep this within bounds. But supposing every case of fracture was treated, as too many such of injury of the eye are, by repeated blood-letting, what would be the result of such cases ? How would the process of repair go on ? Or, not to look so far forward as this, in how many instances should we not see sloughing, ulceration, suppuration, and the conversion, by these processes, of a simple into a compound fracture ? Then, as regards the nervous structures, which may have been uninjured by the accident, we have already had occasion to advert to their exquisite sensibility to the loss of blood, and to moot the question, whether it does not occasionally happen, that the excessive blood-letting, which has been prescribed for the existing conditions of other parts, may not rob these of their vital energies and functions. It is to little purpose that the other parts of the eye be clear, if the retina remain amaurotic and deprived of its powers of perception. Above all things I would advise the surgeon, in all forms of serious injury to the eye, to watch the case with the utmost caution, and not to prescribe, at least as regards so powerful a remedy as blood-letting, for mischief which may occur, but rather for that

which is really in existenee. The operations for cataract, be they of the one kind or of the other, are amongst the most serious of all the injuries done to the eye, and yet we should not, indiscriminately, bleed a patient a few minutes or hours after operating, any more in this, than in the ease of any other surgical operation ; the patient should be placed in every way under the circumstances most calculated to avoid this, and then be carefully watched, and remedies applied according to the circumstances which may arise. It is impossible to prejudge the result, whether the injury be inflicted by operation or other cause, and I have myself been frequently unexpectedly gratified in finding those of my operations, in which, from circumstances, I had most dreaded, and most anticipated severe inflammation, do well without a single disagreeable symptom, or any necessity for the lancet or the leech, whilst in other cases, where it was least expected, the most violent forms of inflammation have ensued.

As regards the particular tissue or structure which has been most seriously injured, the practitioner will do well to look to this. Under the influence of idiopathic inflammation, it has been already remarked in the chapter on these subjects, that different structures are liable to undergo different morbid changes, and that the acute forms of inflammation of these structures require to be combated by somewhat peculiar plans of treatment. The same observations hold good as respects the inflammation

arising from mechanical injury. Of all parts of the eye, the iris is perhaps the one which takes on the highest character of inflammatory action, and that in which the antiphlogistic and mercurial treatment is most essentially required ; and this is one cause which renders extraction so comparatively formidable an operation, from the great liability which is incurred of injuring this delicate structure.

In most cases of mechanical injury to the eye, and especially where the iris is implicated, much advantage will arise from the external use of the belladonna, not only as a means of preventing adhesions and closure of the pupil, but also as enabling us to watch more carefully the deeper-seated structures.

From their position the conjunctiva and cornea are amongst the parts most frequently exposed to injury. Irritating substances, whether in a state of vapour, fluid, or solid, are very liable to get under the lids or upon the eye. When solid, such bodies should be immediately removed, if possible, with great care and gentleness ; and where fluid, or in the state of vapour, they admit of immediate dilution by separating the lids and bathing the eye with tepid water. Some days since I was in a friend's house, where a child, playing with a cayenne pepper castor, threw a quantity into his eyes ; the pain was excruciating, and it was impossible at first to remove all the grains ; I succeeded, however, in washing them out, by diluting them with tepid water, and no further incon-

venience ensued. Quick-lime is one of the most injurious substances, which is liable to get embedded in the conjunctiva, as it not only acts as an irritant, but actually corrodes and destroys the parts with which it is in immediate contact.

There is one form of injury to the conjunctiva and cornea, to which I cannot help calling especial attention, although it is not my intention to speak of all the various forms of mechanical accidents to the eye; I allude to the numerous injuries sustained in railway travelling. In drawing attention to the graver and more serious maladies to which the human frame is liable, we are often too apt to neglect the consideration of the minor ones, which the habits of our times may have rendered more frequent, and therefore in the main more important. Most travellers in the present day are made from necessity railroad travellers, and they all must have witnessed the excessive number of burning sparks, small particles of ignited coke, which are forcibly expelled from the steam engines as from a volcano; the velocity of travelling increases the force with which these particles are thrown, and it is extraordinary how often persons suffer injury from their lighting on the eye, which especially happens in passing through the tunnels, where they have no means of escape, by being blown a little to the one or other side of the train. I have seen a great number of these accidents, none of them certainly attended by loss of sight, but

many with great pain and inconvenience, the patients having been laid up for several days, and sometimes recovering only with partial opacity of the cornea. The best preventive is to wear the ordinary goggle spectacles, but when this accident occurs I would strongly recommend the sufferer to apply to the first surgeon whose assistance he can procure, as the speula may often be readily removed, before much irritation of the eye is set up. Great gentleness should be used in removing it, and if it is so imbedded in the cornea as not to be readily discovered or easily displaced, time must be allowed for the subsidence of the irritation, and for it to be loosened by the incipient process of ulceration, during which period abstinence from all stimuli, entire rest of the eyes, and some brisk purgative should be employed to keep down inflammatory action. On one occasion I found the eye so swollen, inflamed, and irritable, that it was not until some days afterwards, that I was enabled to detect and remove a speula of coke the size of a small pin's head, which was completely imbedded in the cornea; this is frequently the case, for they not only fall with considerable force, but also in a red-hot state, burning their way. It would seem that in some persons this accident is more likely to occur than in others, perhaps from a slower action of the muscles of the eye on approaching danger. I have lately been twice called upon at intervals to remove them from a male servant of a nobleman in my

neighbourhood ; many friends have also assured me that it constantly occurred to them, whilst others, much more exposed to the chances, have escaped.

In the case of mechanical injuries to the eye, the third point of consideration, as respects the previous state of the patient's general health, hardly requires to be further insisted upon here. The physician and the surgeon should constantly bear this subject in mind in the cases which fall under their care, and not less so the oculist. The state of the previous health, no less than the nature of the injury, may give a peculiar character to the symptoms which may ensue, and may entirely alter the propriety of the treatment to be adopted.

The catalogue of diseases which has been already gone through, includes all the most important and ordinary affections of the eye ; greater stress might have been laid on the various subdivisions of those affections enumerated in the more lengthy works of many eminent authors ; such minutiae, however, are rather calculated to puzzle the practitioner than to assist him in simplifying his views, and the adaptation of appropriate treatment. I shall therefore beg to conclude my observations upon the diseases of the eye with a very brief notice of a few affections which have not been hitherto mentioned by me, and which may, I think, be either useful to the practitioner, or interesting to those who are more curious in the study of disease.

Whether occurring from blows or other mechanical injuries, or sometimes without any known cause, rupture of some of the blood-vessels of the conjunctiva is observed, in that part of it which covers the sclerotic. The intense redness to which this gives rise, is naturally apt to alarm the patient and his friends, and sometimes, even, I have known medical men of more than ordinary ability, as regards the other branches of the profession, but who have had but little experience in the diseases of the eye, and never before probably witnessed such cases, take this for acute conjunctivitis. The history of the case and the usual absence from pain, the uniformity of the redness, which differs from the streaky appearance of conjunctivitis in which the enlarged and tortuous vessels are seen gathered together in crowded fasciculi, will readily mark the distinction of these affections; and then the termination of the redness is suddenly and abruptly cut off at the edge of the cornea, which is rarely the case in the intenser forms of conjunctivitis. It is not to be wondered at, that the patient should be alarmed at the sudden supervention of this affection so formidable in appearance. Some time ago, a lady, residing at Cannonbury, who had been formerly under my care for some affection of the eyes, went to bed in excellent health, and woke up in the morning with the conjunctiva thus affected; she was so greatly alarmed that she immediately ordered her carriage and drove to my house. It was with difficulty that I

could persuade her of the trivial nature of her ailment. The blood thus effused is generally removed pretty quickly and steadily, by the action of the absorbents, and, should this process prove tedious, it may be accelerated by the application of slight stimuli, as the vapour of æther, &c., to the eye. Blood-letting in any shape is quite unnecessary.

False cataract, a somewhat absurd term, occasionally depends upon the effusion of blood into the anterior chamber of the eye ; at other times, on the effusion of pus, lymph, &c. The history as well as the appearances of these affections, are such that it would be impossible for them to be mistaken for cataract by the experienced oculist. And the application of the word cataract at all to these affections is misplaced, inasmuch as cataract should be confined to affections of the lens only and its capsule. It will not be necessary to evacuate blood from the anterior chamber by puncture of the cornea, as has been recommended in the case of pus so situated, because the source of irritation is less, and there is no other diseased action going on which requires to be thus relieved. Pus, wherever effused, is not readily re-absorbed, and, indeed, many of the best physiologists and practitioners of the present day are disposed to doubt its ever being re-absorbed, and are inclined to consider that not pus, but serum or blood, has been the substance effused in those cases of supposed abscess which have undergone spontaneous cure. I cannot myself take this view of the sub-

jeet; but, at all events, there are sufficiently strong reasons for praetising the puneture of the cornea in the ease of effusion of pus, and for abstaining from this operation in the ease of effusion of blood into the anterior chamber. In the case of common bruisers, in the affeetions of the conjunetiva above described, and in many other instances, we have abundant evidence of the facility with which blood poured out from its vessels into the surrounding textures is re-absorbed. In the event of its effusion into the anterior chamber the proeess may be somewhat slower from its being less completely in contaet with the solid textures and their vessels, yet its removal generally goes on very steadily and rapidly: in one instanee, however, in which I operated for cataract by extraetion, a drop of blood was effused, and remained in the anterior chamber, which eontinued bright as arterial blood, and undergoing no ehange for several years: sight was not entirely prevented by this drop of blood, (for it appeared as a single drop,) although slightly impeded. Year after year I observed this deposition remaining, perfccctly bright in the aneterior chambcr, until at last nature, as if having previously forgotten or overlooked it, seemed to take upon herself the office of removing it, and then in the course of a few weeks it rapidly disappeared.

Ossification of various parts of the eye are mentioned by different authors; such change must be of eomparatively rare oeeurrence. I have never met with an in-

stance of ossification of the lens, although such affection has been occasionally recorded. In India I once had a case of ossification of the iris in a female, of about thirty years of age, throughout its entire extent; the case was very interesting and curious, the iris was entirely converted into bone, fixed and immovable, and the radiated structure of the bone was beautifully seen through the transparent cornea. I showed the case to many medical friends, who were much interested in its inspection, and I do not remember that any of them had seen a similar affection. The sight was but slightly impaired, nor could I trace any sufficient cause for the production of this singular phenomenon.

ENTOZOA IN THE EYE.

The eye is liable to be the seat of certain minute parasitic animals, or entozoa. Several animacules of various descriptions have been enumerated by authors, especially the Germans, as infesting the lamina of the cornea, or the anterior chamber of the eye. I cannot say that I have myself ever discovered such animacules in the human eye, nor am I aware that they have been seen by any English oculist. I have myself, however, seen frequent cases of entozoa in the horse's eye during my residence in India, and have several times operated successfully for their removal. I can therefore readily conceive the probability of their existence in the human eye, perhaps too, more frequently than is generally ima-

gined even by the German authors to whom I allude ; unpereived and undiscovered from their exquisite minuteness, but sometimes, perhaps, the unsuspected cause of inflammatory, or other serious affections of the eye.

The following ease of sueeessful operation in the horse was published by me some years ago in the Laneet.

A high-bred Arab horse, in the possession of Captain Seton, town major of Bombay, when under training, was observed to become out of eondition. The horse was dull, and off his feed, and had what I have invariably observed in these cases, the strange and almost unac-eountable symptom of weakness in the loins. The eye affected was slightly weak and watery, but free from any pereceptible inflammation ; and the aqueous and other humours were in a perfectly natural state. The worm (for such was the appearance of the entozoon) had been distinctly seen for several days, moving about in the whole eireumferenee of the anterior chamber, exaetly like an eel in a basin of water ; apparently in the full enjoyment of its natural elemcnt. It was nearly an inch long, of the diameter of sewing silk, and of silvery whiteness.

Having previously seeured the animal by casting him on a bed of straw, in a strong light, several persons holding his head down firmly, in the presence of many sporting gentlemen, one of whom seeured the upper lid with Pellier's silver elevator, with a eataract knife I made a free incision through the lower margin of the cornea,

somewhat as in the operation for extraction of cataract. The aqueous humour immediately escaped in a sudden gush, bringing with it the worm, which did not long survive its change of situation.

The eye was now secured, much in the same manner as after the operation for extraction of cataract in the human eye, and measures were taken to prevent his rubbing it against the manger. The wound healed without a bad symptom. The aqueous humour was soon reproduced, and the sight not in the least degree injured. The animal rapidly improved in health, and became a great and deserved favourite on the Calcutta turf, where he was afterwards sent, winning many races.

This operation requires, of course, a strong light. On two occasions in which I have operated, the aqueous humour in gushing out fell amongst straw, and I was unable to discover the worm, but the successful issue of the cases left but little doubt that they had been carried out with the aqueous humour. The worm does not always, I suspect, confine itself within the limits of the anterior chamber; I have seen it disappear apparently behind the iris, and again return through the pupil. If its presence in the anterior chamber may be attended with constitutional disturbance and impaired vision, we may readily suppose that still more serious inconvenience may arise from the mischief it may occasion to the deeper-seated structures of the eye behind the iris.

ABSENCE OF THE EYES AT BIRTH.

Congenital absence of the eyes is a circumstance of rare occurrence. Two years since, in Gloucestershire, I met with a case in which a child was born without eyes. I first saw the child only a few days after its birth ; the lids were closed, and upon the most careful examination, I could not detect any vestige of eyes. I still, however, hoped that they might exist, and become ultimately developed ; such, however, was not the case. Mr. Moore, an intelligent medical practitioner at Moreton in the Marsh, has kindly given me an accurate account of this case up to March, 1844, from whose letter I quote the following particulars. " Many of the appendages are present, viz. the eyelids, orbit, &c. On examination I found the orbit unoccupied, except by a highly vascular and thickened mucous membrane, secreting a fluid of a very irritating nature, excoriating the lids and cheeks."*

ARTIFICIAL AIDS TO VISION.

Vision, under many circumstances, receives powerful artificial assistance by means of glasses of various con-

* Dr. Merriman has lately mentioned to me a curious instance, in which this congenital deficiency had occurred in one member of the same family for many generations. The malformation in which the infant is born with but one eye, and that in the middle of the forehead, is less uncommon. A beautiful preparation of this kind may be seen in the Anatomical Museum of St. George's Hospital.

struction. The healthiest and most powerful vision is not adapted to all the various purposes to which scientific and enlightened man has need to apply this faculty. Mere habit, arising out of the necessities of ordinary life, would appear to quicken this, as it does the other senses, and many of my readers may have personally witnessed, or at least read of, the extraordinary quickness and length of sight of some savage tribes, as well as their wonderful powers of hearing. Sailors, from habit engrafted on a naturally strong and healthy organ, are enabled to descry objects with astonishing accuracy at distances, which would be quite beyond the reach of an inhabitant of Cornhill, or any ordinary landsman. But this is not enough—man inquisitive in the nature of the objects by which he is surrounded, must needs take a glance at the heavenly bodies, and ascertain their dimensions, relative positions, &c.; even in his less civilized and scientific character, he is not content to scan round the country or the seas with his naked eye; some artificial assistance is required to afford him a distinct view of surrounding objects, to discover their real nature, their distances and relative positions; and for all these purposes, whether of scientific or natural social wants, he has discovered the use of the telescope. For scientific purposes alone, he has been tempted to examine into the intimate nature of objects, their colours, construction, &c., with a degree of accuracy and minuteness, far exceed-

ing that which is afforded by the ordinary powers of vision, and for this purpose he uses microscopes of various kinds.

The telescope and microscope, then, are instruments of a highly civilized and social condition of society, not intended to supply the defects of unhealthy vision, but to augment and exalt the natural powers of this faculty in health. They do not, therefore, come under the observation of the oculist further than to give this caution, that as their frequent use calls for increased exertion of the eye, they should be employed with care, not too long at a time ; and the person, who is from taste or necessity in the frequent habit of recurring to such aids to his natural power of sight, should be the more cautious in other respects to husband up and take care of so valuable a sense.

As the effect of congenital formation, disease, or other changes in the eye, hardly recognised as disease, the powers of vision are apt to present deficiencies which render sight incompatible for the ordinary pursuits and occupations of life. The deficiencies of vision to which I now allude are rectified by the artificial use of glasses, or spectacles. We are so much in the habit of applying the epithet “clear” to the powers of vision ; persons expressing themselves “as seeing very clearly,” or “not being able to see so clearly as they used,” that some error is occasionally made by the public, in considering that specta-

cles have the power of rendering sight more clear; more distinct certainly it may be rendered, but not more clear, that is to say, no artificial instrument placed before the eye is able to counteract the effects of a turbid or opaque state of the humour or transparent tissues of the eye itself; if under such conditions of the organ, some form of glasses are serviceable, their assistance depends upon other and different causes; all spectacles assist vision by the alteration of the focus. Under ordinary circumstances the eye is enabled so to adjust its focus of vision as to be able to perform all the ordinary purposes of this faculty. A person sees very distant objects clearly, but with a partial degree of distinctness, so much is crowded into the small focus of vision that he is unable to see the object in all its minuter details: placed nearer to the eye, a smaller amount of objects is embraced within the focus of vision, and he is enabled to discern clearly and distinctly all their minutiae of detail. Such persons, with very trifling degrees of difference, are able to read, whether a large or small type, at about the same distance from the eye. Others again, from some defect in the humours, cornea, or lens, are what is termed short sighted; they may be able to read distinctly, only, when the book is placed very close, inconveniently close to the eye, and are utterly unable to recognize objects at a distance at which they are clearly and distinctly visible to other persons. From differences in the same structures of the

eye, others again may be possessed of a more than ordinary power of discerning distant objects, and require to place a book or any such object at an inconveniently long distance from the eye, or are altogether unable to read it with comfort without the assistance of glasses.

Short-sight is dependent upon too great refraction of the rays of light, and is to be corrected by the use of concave glasses. Far or long sight depends, on the contrary, on the too great divergence of the rays of light, which occurs in the inspection of objects situated near the eye, and requires to be corrected by the use of convex glasses.

These respective defects of vision, as before stated, are dependent upon certain conditions of the transparent reflecting media of the eye, and not upon conditions of the optic nerve or retina, although they have been erroneously classed by some authors amongst the nervous affections. The notion that short-sightedness being dependent upon too great convexity of the transparent parts of the globe, corrects itself with advancing age, as the globe shrinks a little in bulk from diminution of the humours, &c., is not perfectly correct; for such is the effect of habit, that but few persons who have early accustomed themselves to the use of concave glasses, are enabled to leave them off with advancing years: what might be the case in a less civilized state of society where spectacles are unknown, and unused, I cannot say. It does, however, happen that

with advancing years, the eye, from alteration of its reflecting media, loses in some measure its powers of concentrating the divergent rays of light proceeding from near objects, and that persons still perfectly able to distinguish distant objects, so as to enjoy landscapes, field sports, &c., are obliged to use spectacles for the purpose of reading or inspecting objects closely. There are, of course, many exceptions to this general rule; but its frequent observance has given rise to the application of the technical phrase of presbyopia, implying the vision of old age, to this defect.

Habit seems to exercise a powerful effect in inducing these peculiar conditions of sight, for whilst amongst the lower orders of people, and many classes of persons whose occupation does not occasion them to exercise their eyes much upon near objects, short sight is of very uncommon occurrence; amongst those, on the contrary, who are of studious habits, or operatives whose eyes are constantly directed to the minute inspection of near objects, the affection is very common indeed. This must be regarded as the effect of habit in permanently fixing the focus of vision, not through the influences of the nervous structures alone, but that of the globe itself; under circumstances of perfect vision, the eye is enabled speedily and readily to adapt itself to the alternate examination of near or distant objects, the constant habit of application to the one or other, diminishes the powers of this faculty of change and adaptation.

These facts, therefore, deserve the best consideration both of the oculist and the public; first, as pointing to certain circumstances, the careful observance of which may prevent the occurrence of such inconveniences; and secondly, as encouraging the observance of certain rules of practice on the first appearance of any such defects. It is probable that a little care and management in the use of the eyes might often correct these defects in their earlier stages, and not only prevent the necessity for using glasses, but give increased strength to the powers of vision.

With respect to the choice of spectacles, it is hardly necessary to observe that the first point to be attended to is the kind of defective vision which they are intended to correct; in this however there is no fear of mistake: the next thing to be observed is, that the glasses should be perfectly clear and transparent, and free from all irregularities or flaws, whether in their substance or surface, which may tend to alter the uniformity of the reflection of the rays of light, and thus impede vision in any particular direction. Crystal is far better in this respect than glass, but the expense of spectacles of this material places them beyond the reach of many persons. There should be also the most perfect harmony in respect of the foetal powers, &c., of both the glasses. All these matters must be trusted rather to the optician than either the oculist or the patient, whose character and respec-

tability will be the best guarantee that the utmost care is observed by him in the selection and manufacture of his glasses. The patient should be especially careful to select the spectacles which best suit his vision, and which afford him the most comfort, and carefully to reject such as occasion weariness, or other inconvenience of the eyes. Persons long accustomed to the use of such instruments will, from habit, readily select those which suit them best, but the uninitiated require a little more time to form a correct opinion ; it is always, therefore, better for them to arrange, that if, after a few days' trial, their spectacles do not exactly suit them, they may have the privilege of changing them. Much comfort, as well as much advantage, accrues in some cases by the selection of two or more pairs of spectacles for different purposes, the one being suited for ordinary out-door occupations, the other for reading, needlework, &c.

An erroneous idea sometimes prevails amongst the public to the effect, that the same glasses must be necessarily suited to the same degrees of age ; it is hardly necessary seriously to combat such an opinion ; it is not to the different degrees of age, but to the different degrees of defect of vision that glasses must be suited. For the purpose of convenience and uniformity of shape, &c., in their manufacture, opticians are in the habit of numbering their spectacles, the numbers corresponding to the exact construction of the instruments ; it is well to re-

member these numbers, in order that a person, breaking or losing his glasses, may supply their place by a pair exactly corresponding in all respects; but it is by no means advisable, or even right, to recommend the use of glasses simply in reference to our supposed opinion of the exact number which may suit any particular degree of defective vision; careful trial will alone warrant the recommendation of any particular pair of spectacles. The size as well as the exact fitting of spectacles, so that the centre of the glass should correspond with the centre of the cornea, are matters of more importance than is generally supposed; the fashion of the present day appears to be to wear spectacles much too small, by which many rays of light fall upon the eye, from without the boundaries of the glass, and the field of vision is thus constantly limited in certain directions in accordance with the size of the glasses, the effect of which is that the eyes are from habit used in a direct line only. It may also be observed that when persons are sufficiently short-sighted as to require artificial assistance, it is far preferable to use spectacles than a single glass, which is almost instinctively, from habit, applied to the same eye; this, a matter of minor importance in the ordinary use of the single glass in the course of out-door exercise and its occasional use, becomes a much more serious inconvenience when it is employed for the purposes of reading or study; in confirmation of the truth of which may be

cited the greater frequency of amaurotic and other affections of the right than the left eye amongst persons who have been frequently in the habit of over-exerting this eye in telescopic or microscopic investigations.

After the operation for cataract, by whatever means the lens is removed, glasses are rendered necessary as a substitute for the lens itself. In some few instances, where the operation is performed during the middle period of life, and still more frequently in the case of the operation for congenital cataract in infancy, habit corrects the deficiency of sight arising from the loss of the real lens, and the patient is able to use his eyes, for all ordinary purposes at least, sometimes even for reading, without the assistance of glasses.

Spectacles are often especially useful as mere eye preservers, whether against too brilliant a light, dust, or wind. The ordinary goggle glasses are employed for this purpose, and are the best, as affording a shade both at the sides as well as in front of the eye. The colour of these glasses is of importance, and by far the best, in my opinion, are those of a blue tint. Green glasses, not unfrequently in use, are by no means good for this purpose, for the supplementary colour of green is red, the most injurious and prejudicial of all colours; and any one may readily exemplify this observation for himself, for if, unaccustomed to them, he wears green glasses for a few minutes, and then removes them, he will observe that

the immediate effect of their removal is to give a red east to every object which he regards. The gauze-wire spectacles, valuable as a protection against mechanical violence in some branches of trade, are objectionable as mere preservatives of the eye against a strong glare of light, because the bars break up and intercept the rays of light, and induce a dazzling, unsteady vision, which habit may perhaps render inappreciable, but which, nevertheless, does exist, and cannot but be prejudicial.

In England it does not often happen that we have such a succession of very bright weather, as materially to inconvenience the eyes by too great a glare of light. Not so, however, in tropical and some other climates, and whatever may be the effect of habit on the natives themselves, the eyes of the European are no more adapted for the glare of light of an Eastern sky, than his bare head for the intense heat of the sun, which is borne with impunity by the natives. I would therefore earnestly recommend all persons about to take up a permanent residence in these countries, or even about to travel much in the south of Europe, to arm themselves with such spectacles, which will not only form a great comfort in their travels, but afford a most useful and essential protection to the eyes. A hot and brilliant sun, however, is not the only condition under which the eye is liable to be oppressed with excessive light; perpetual snows are equally injurious, and demand from those unaccustomed to them, the same measures of precaution.

SOME REMARKS
ON THE PRESERVATION OF EYE-SIGHT.

Having now given a brief sketch of all the more important morbid conditions of the eye which demand the care and attention of the oculist, I shall conclude this work with a brief answer to a question which has not unfrequently been put to myself, and no doubt to most other oculists, and which must be one of no trivial interest to the public generally,—“How am I to preserve my sight?” Diseases of the eye, I have endeavoured to show, are diseases of the system at large; diseases as constitutional in their origin, complications, and results, as any others to which the attention of the physician or surgeon may be drawn. My answer therefore is, take care of your general health! See that your habits of life, as regards eating, drinking, exercise, &c., are such as are most conducive to robust, general health. Many of the affections of the eye are hereditary, and like gout or any other hereditary disease, are best avoided by the avoidance of such causes as predispose to local disease through the medium of constitutional derangement. The care which should be observed by all, should therefore be especially respected and observed by these; and let me tell them too, such care and attention not unfrequently receives the reward which it deserves, in these as in other diseases, and may at least, if it does not secure a perfect immunity to themselves, be rewarded by a blessing on their posterity.

Nor are these the only rules to be observed. Dissipation of all kinds is no less prejudicial to the organs of vision than to other parts of the frame, the eyes being liable to suffer in proportion to the constitutional predisposition, hereditary or not, to such affection.

So far as respects the general health. The next point refers to the eyes especially ; caution should be taken to use and not abuse them. Inordinate exercise of the organ, whether in study, microscopie or telescopic investigations, should be discouraged. Too strong a glare of light should be avoided ; and this subject deserves some general consideration, in connexion with the lighting of our streets, theatres, club-houses, and other great public buildings. On the other hand, the eye should not be exercised in reading, or other occupations, under a light too feeble to afford distinct and clear vision ; and above all, under one that is flickering and variable. Ladies are frequently too careless of their eyes ; and the minute subjects of needle-work, or the dazzling occupation of the present favourite pursuit of worsted work, when assiduously followed up, is but too liable to induce, at early periods of advancing years, defects of vision, insidious and but little suspected or anticipated in the vigour of youth. After this caution respecting the use of the eyes, one more only requires to be added, which is, in my humble opinion, a matter of no small importance, and of almost universally useful application. I allude to the free and

copious ablution of the eyes, temples, and forehead with cold spring water. This I recommend to be done at least twice a day, or when the organ is especially fatigued by study or the glare of a strong light in travelling, more frequently. I have already had frequent opportunities of adverting to the utility of this measure in some of the diseases of the eye or its appendages, and I cannot too strongly recommend its employment, also as a means of preventing and averting disease; its bracing and tonic effects upon the minute blood-vessels, nerves, and other tissues are well known, and the comfort immediately experienced from the practice is of itself no small recommendation. I am confident that I have not only frequently seen examples of the effects of this practice in preventing, but also in retarding the progress of many formidable affections, as amaurosis, cataract, &c., when used from the earliest period of their invasion. In fact, the whole system of bathing, whether using the hot, warm, tepid, cold, vapour, or shower bath, habits so prevalent in many other countries, as to constitute a national feature and character of the people, are too much neglected in this highly civilized but too busy land. These habits are, I believe, no less conducive, through their benefit to the general health, to the protection of the eyes than to that of other parts.

Some particular measures of precaution may be required to guard against particular forms of disease. This matter,

however, it will not be necessary for me to enter further upon here; a consideration of the particular circumstances of the case, and reference to the former parts of this treatise, will afford sufficient clue to the adoption of such measures of especial precaution.

In conclusion, I shall take the liberty of adverting to a curious custom which prevails amongst the females of India, who are in the habit of using a black powder called Soorma, which they do not put into their eyes, but paint with great delicacy on the roots of both the upper and lower lashes. This, besides contributing much to their personal appearance, by increasing that softness of the eye so peculiar a feature of Eastern beauty, they conceive affords them some protection against cataract, a disease too prevalent amongst them. It certainly has the effect of keeping the eyes cool, and probably, by absorbing some of the superfluous rays of light by which they are dazzled and annoyed, may afford some protection as well as comfort. Much on the same principle, that is, by diminishing the access of a glare of light to the eyes, are common eye-shades useful ; which, whether worn in the shape of a green shade over the eyes, or over the candle or lamp itself, are very valuable means of saving these important organs. Such practice, however beneficial in health during great exertion of the eyes, as preventive of disease, must not be confounded with the use of shades, and still more so of bandages, in many forms of chronic

disease, when a moderate exposure of the eyes to light, and a free access to them of pure air, are highly beneficial by acting as mild stimulants, and if the term may be allowed, as local tonics.

THE END.

LONDON:

PRINTED BY G. J. PALMER, SAVOY STREET, STRAND.



